



Our 13th Year

\$1.50

AMATEUR TELEVISION MAGAZINE

JULY - AUG., 1980

Vol. 10, No. 4

VIDEO BRAIN, 450 + 1240 MHZ ATV TEST GEN., NEW 450 RX CONVERTER, MARS SSTV, AMATEUR RADIO-TV SERVICE (ARTS), SSTV TUNING AID, CROSSWORD PUZZLE, ATV RPT CIRCUITS FROM VKS RTV, 2-VIDEO SWITCHER PROJECTS (IC's) & MUCH MORE!



ATV thrives in England and here's a shot of some of the activity. The Kent Video Group had a stand at the Maidstone Mobile Rally last May and brought a display of members' equipment. Highlight of the day was the reception of Nick G4IMO from 45 km away near South-end over a less than easy path. Nick is being received on a Russian Rigonda portable and "monitored" by CCTV. On the right is a colour pattern display demonstrating a correctly set up PAL decoder, courtesy of Clive G8EQZ. Above it is a homebrew camera by Any G8SUY, sporting a surplus Sony zoom lens. Just visible on the left is a Sony TV9-90 showing the DF2SS pattern generator constructed by yours truly, Andy G8PTH. This produces 14 different patterns, changing automatically every 2 seconds. The whole display is not very tidy but these things never are. It created plenty of interest, so the main object was achieved.

KLM Superior-Quality VHF and UHF Antennas

2 Meters...

Two-meter beams deliver maximum gain and clean patterns, with VSWR of less than 1.2:1 across the entire 144-148 MHz range. High grade insulating materials, weather-resistant aluminum boom and elements. 12, 14 and 16-element beams make outstanding moon-bounce building blocks.

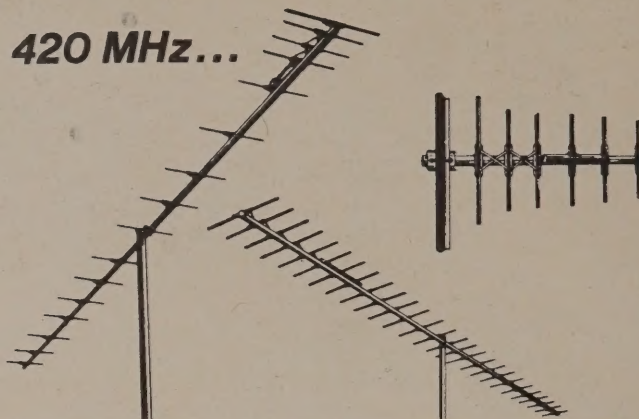
14-Element
KLM-144-148-14 **\$65⁹⁵**

Gain: 14.2 dBd. Beam width at 3 dB pt.: 18 degrees. Feed impedance: 50 ohms balanced (KLM 1:1 Balun, 144-148-50 optional). Boom dia.: 1½". Boom length: 17.33'. Max. mast size: 1½". Center mounting. Wt.: 8 lbs.

16-Element
KLM-144-148-16 **\$72⁹⁵**

Gain: 14.8 dBd. Beam width at 3 dB pt.: 16 degrees. Feed impedance: 50 ohm balanced (KLM 1:1 Balun, 144-148-50 optional). Boom dia.: 1½". Boom length: 20.66'. Max. mast size: 1½". Center mounting. Wt.: 10 lbs.

420 MHz...



A versatile series of KLM beam antennas in a variety of configurations: broadband rear-mount type for horizontal or vertical arrangement, ultra-high-gain DX type, and optimized long boom Yagi for narrow-band use. All have VSWR less than 1.2:1 across the entire band. Maximum mast size: 1½".

6-Element
KLM-420-470-6 **\$19⁹⁵**

Frequency: 420-470 MHz. Gain: 8 dBd min. F/B ratio: 20 dB min. Beam width at 3 dB pt.: 30°. Feed impedance: 50 ohm balanced (Balun 420-470-50 optional). Boom dia.: 1". Boom length: 2'. Mounting: End or center; horizontal or vertical. Weight: 1.2 lbs.

14-Element
KLM-420-470-14 **\$31⁹⁵**

End mountable; vertical or horizontal polarization. Excellent for repeater control. Frequency: 420-470 MHz. Gain: 13.7 dBd. Beam width at 3 dB pt.: 24°. F/B ratio: 20 dB min. Feed impedance: 50 ohm balanced. Boom dia.: 1". Boom length: 4.75'. Wt.: 4 lbs.

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(Specify Band)

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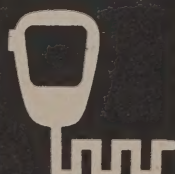
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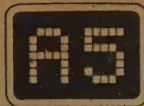
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DEVOTED TO HAM TV

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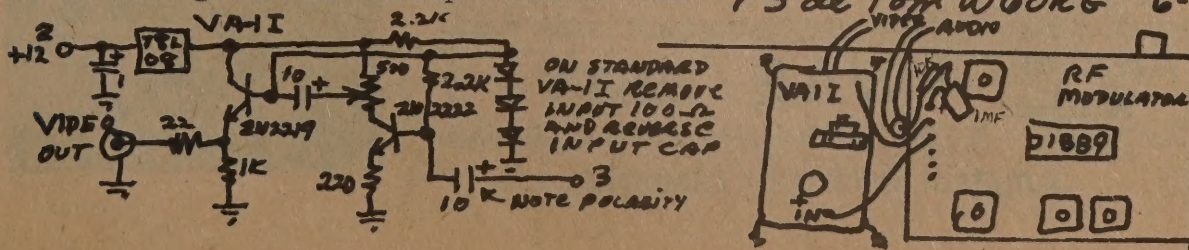
VIDEO BRAIN ON ATV BY W6ORG

Whats a video brain? A electronic type that syncs a lot? No its a low cost micro computer that has become available due to a bankrupcy sale at only \$88. See page 185 of the May issue of Popular Science Magazine. It normally puts out on TV channel 3 or 4 a variety of programs. In its own ROM it has a 18 character by 7 line text which is great for messiaages and titling. A key that changes the color of the background, another that gives color bars, and two others that give a time and calender and a setable alarm. The alarm puts out a tone and whatever you have typed into the text memory. Cassette programs are available for between \$12 and \$15. We have the blackjack which we play over the air. The computer comes with two joystick controls for two player action. We are integrating it into our repeater system with the use of touch tones on the subcarrier and two meters so that anyone in the area can practice up before going to Las Vegas. To get one get a copy of the Popular science magazine or call the toll free number 1-800-3285082 (C.O.M.B. Co.). Be patient, it takes about 5 weeks to get them.

Since the company that made them is out of business, we have not been able to get a schematic or service manual on the computer. If you have or know where one is Id appreciate a copy!!!! So to get a video output to drive the ATV transmitter I had to open the computer up and snoop around the board with a oscilloscope. For the computer nuts the CPU chip is the 80385. I did find that the composite color video was available without opening up the shielded metal case that contains the CPU.

All the signals necessary for running to your ATV transmitter are available on three pins inside the separate shielded enclosure that houses the channel 3 and 4 modulator. To get to it carefully remove the screws holding the bottom cover and lift the cover back toward the rear. The RF modulator enclosure is the one with the RCA phono jack on it. Remove the cover by lifting and heating the two tack solder points. Toward the front and side you will see a row of pins. Starting at the side the audio is on pin 1, +12 vdc on pin 2, and the composite color video is on pin 3. The composite color video is upside down at this point so I used one of my VA-1I inverter modules to invert it and drive a 75 ohm line. I mounted it just on the other side of the RF modulator closest to the pins using #18 buss wire and soldering to the metal cover. I could have used screws but didnt want to disassemble the whole CPU board assy. I cut a $\frac{1}{4}$ "X $\frac{1}{4}$ " notch in the RF modulator cover to run the jumper wires out. I also drilled a $\frac{1}{4}$ " dia hole in the back top plastic cover to run the video and audio coax cables out. The audio is about 2 v p-p but high Z. So a 1 mf cap and 10K series resistor combination isolate the external load. Most VCRs are 1 v p-p into 10K input and a recent mod to the FMA5 subcarrier gens also accept that level.

73 de Tom W6ORG 6-80





Fast Scan TV-SSTV

video



Amateur Television Magazine

Mike Stone, WBØQCD

P.O. Box H, Lowden, Iowa 52255

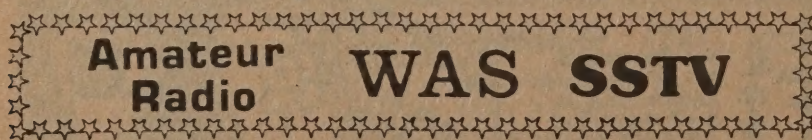


We start the July/August Column with good news for General Class SSTV operators as it was announced in mid-June that the FCC has issued a "Notice of Proposed Rulemaking" #80-252 on a docket RM-2861 originally proposed by then WB9WMM (our publisher) for the approval of A5 emissions in the General part of the band. The FCC is requesting comments on the matter be filed no later than Sept. 20. This is a real opportunity for the vast number of General class SSTV operators to speak up &

be heard! Send the original plus five copies to Federal Communications Commission, Washington, D.C.-20035 and mark on the envelope "PR-Docket 80-252". With the apparent intentions on the part of the FCC, the ruling looks favorable possibly as early as October or November. What a nice Christmas present? The only argument against this proposal would be of incentive upgrade, but what incentive it would be for the thousands of Technician license holders. The next question becomes what calling frequency to jump in and fight for? 14.230 Mhz. will most likely be the predominant SSTV operating gathering location still for many, but a second or hopefully united SSTV frequency for all ATV operators should carefully be considered. No matter what is picked, there will be quite a group of displeased "brothers". My recommendation (as a DX'er and SSB'er) would be either 5-10 kcs just above the lower band-edge-say 14.280 or try for the top end segment at 14.340 and up. What do you think? How about the other bands? It might also be mentioned that KB9FO has also petitioned that SSTV, Rtty (Baudot and Ascii) be allowed only on the recent new Amateur allocations bands. Write today and pass the word for approval of #80-252! 10 Meters is trying to come alive again for the DX season, but up until late June showed only a few good workable openings. K9ILA worked WA8YJE for perhaps the first(?) "aurora" SSTV qso on ten meters, other 10 meter stations seen were K4LF, ZS6BTD, ZS6BQT, LU4DGN, G3WW, VK3AIH, VE3LU, EA3BCZ and ZD8KG. 5NØDOG was finally found at Dayton Hamvention near the busy "beer-pub", and W9NTP dazzled everyone again with his progress in Color SSTV and Medium Scan. Volker Wrasse-DL2RZ unveiled his new SC-422 Converter which outfeatures the Robot 400's with 8K memory (review to follow as I purchased one) and I was glad to spend some time with ZD8KG-Kent from the Ascension Island. TI2SW reports working 17 DX countries including a "rare" Canary Islander, KC4CK (WD4FHB) reports 50 DX countries on SSTV and completion of WAS (A5 Magazine has award). WA1CTN had a super contact with on 14.230 Mhz. in mid-May with JA9LB, Newcomers include ZS6RA, WBØYUI (got on for \$35), KA2EFG, KA4FOO in Orange Park, FLA. looking for help, and WA2SWH. -United Nations SSTV station LU1UN working twenty, W4DWE worked VE3JW at Ottawa Museum of Science and Industry while K1DMU tried in vain to get G3WW and G4GH together on two meters SSTV only to find out that 80 yr. young G4GH had to qsy to a "hot date"! HS1SW in Thailand active on twenty, WA8YJE likes 15 meter ATV, W4KZL & WB4ROY worked VK2BXX in Australia. SSTV A.R.T.S. (Amateur Radio Television Service) needs more registered traffic operators and is cooperating with Navy/Marine Corps. MARS SSTV Specialty System Network at 13.975.5 & 7.368.5 Mhz. See you at Peoria, ILL. "Superfest" Sept. 20/21 featuring special ATV gathering, station and forums!

Fast Scan TV

VK4AJS building FSTV system in Australia and looking for contacts, WBØZPX and WBØKFB first in Southeast Iowa to get on-the-air, WDØATT purchased new PC system and building antennas, W3HFI reports a recent upsurge in activity in the Philadelphia area on 439.25 Mhz./421.25 out built by K3TS Tom Stewart-ATV buff. Look back at June QST, World Above 50 Mhz. column as Henry retaliated again. VE3LU, Clayt in Bradford, Ontario been on A5 since early 1950's with homebrew colinear design system and--reports a personal best at 439.25 into Painsville, Ohio with others working into Chicago when the band is up. Send reports!



Amateur Television Magazine



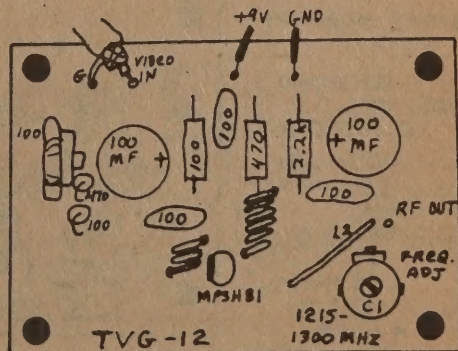
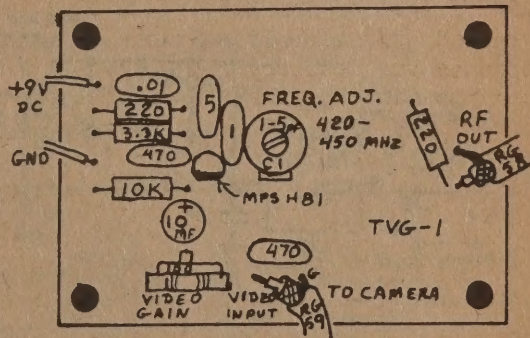
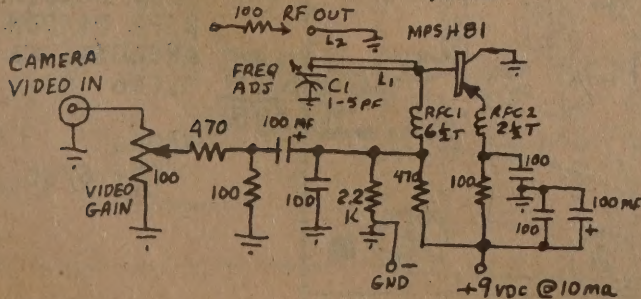
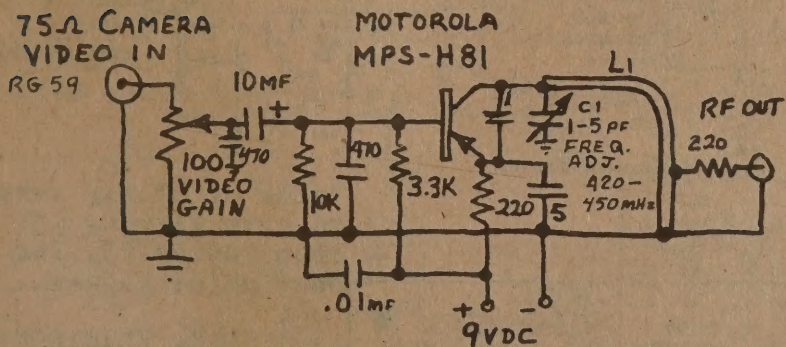
TVG-1 & 12 ATV TEST GEN

These two test gen modules are simple video modulated oscillators that will put out about 1 mw of RF in the 420 to 450 MHz or 1215 to 1300 MHz ham band to enable tuning up receiving converters, antennas, or a short range transmitter for cordless monitoring or ATV demos. They should be mounted in a chassis for stability. The frequency may change with stray capacity caused by proximity to other objects within 3". A $\frac{1}{4}$ wave whip made out of buss wire can be used as a antenna ($6\frac{1}{2}$ " on the TVG-1 and $2\frac{1}{4}$ " for the TVG-12) for up to 100' range, -or a good gain antenna may be used for some QRP DX. Some stations report good pictures over 5 miles. A 220 or 100 ohm resistor is put in series with the RF output to minimize the affect of antenna loading on the oscillator tuned circuit. The modules will tune each side of the band, so do not connect to a outside gain antenna unless you are positive of the oscillator frequency. They come set to midband.

To use connect the camera or other video source (1 V p-p neg going sync) to the video input. Connect a 9V battery or other 9 volt power source, & antenna or whip. Tune your ATV converter to find the generator freq. Adjust converter tuning and video gain pot for best picture. Some fluctuation will be noted as you move about the room due to multipath bounce off metal objects. Reposition the gen or antenna as necessary. With modulated oscillators there is some FM along with the AM so best picture may occur slightly tuned to one side of maximum signal strength.

For use as a signal gen for tuning up preamps and converters, a tightly shielded box with the +9v lead coming out thru a .001 feedthru cap is necessary. The video in must also be thru a .001 feedthru cap. Use a good step attenuator on the output to adjust levels lower to maintain a weak signal as you peak. A insulated tuning tool should be used if the oscillator freq. must be changed to minimize stray capacity freq. changes. The tuning is fast so adjust slowly. The TVG-1 typically tunes from 400 to 480 mHz full range.

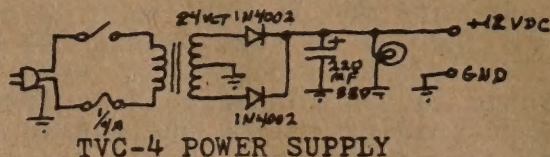
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213-4474565



420-450 MHz DOWNCONVERTER TVC-2,4

The TVC-2 is a stripline replacement for the TVC-1 ATV Downconverter. The module comes roughly tuned and tested ready for you to mount in your own indoor or outdoor antenna mounted enclosure. The low noise preamp stage must be fine tuned with trimmers C1 and C2 to account for your chassis affect on stray capacitance and any antenna miss match. Peak on a weak signal using a dc voltmeter on your TVs IF AGC line, or one of our TSQ-1 Squelch/S-Meter boards.

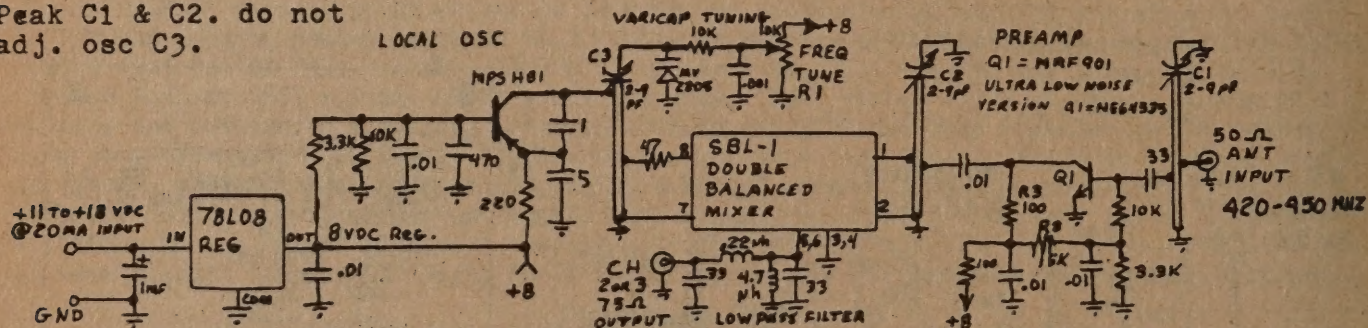
The TVC-4 is basically the TVC-2 module with a Ten-Tec JW-5 case and power supply plus the required knob, switch, connectors, hardware, etc. The power supply at right can be followed as example for building your own with the TVC-2. The 10K trimpot may be removed and 3 wires run to a 10K panel pot for freq. tuning.



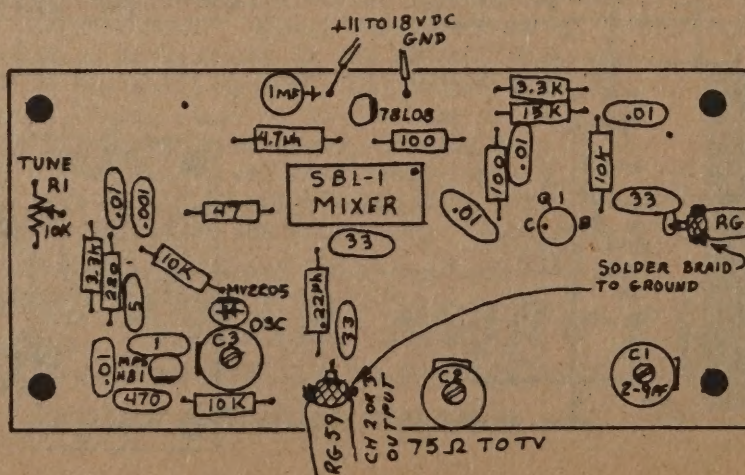
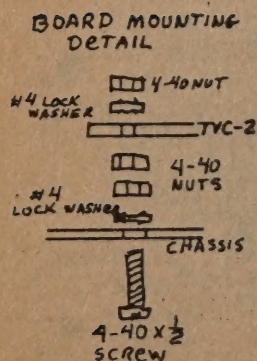
For antenna mounting use a good weather proof enclosure such as the Bud CU247 or Hammond 1590D and tape the cover crack. Spray outside with epoxy paint. Run four wire rotor cable for ground, +12, and the freq. adj. pot wiper and +8 regulated. Use a good UHF T/R relay in the box with the relay energized in receive along with the converter to minimize the chance of xmitting with high VSWR and blowing out the preamp transistor.

75 ohm coax should be run all the way up to the TV sets VHF tuner. Do not use twinlead as it will pick up the strorgadjacent broadcast TV stations and put interference into the ATV picture. Check for twinlead from the TV sets back cover to the VHF tuner. If there is some Replace it with a F connector on the back cover, and run a short length of coax to a 75 to 300 ohm Balun (Radio Shack 15-1140) mounted at the VHF tuner. Cut the twinlead part as short as possible and do not let the coax connector (RS 278-211 type F59) touch the TV set chassis as most are hot to the AC line. The best TV sets to use are usually the AC/12VDC portables. They are not hot chassis and usually have hotter receivers. They also make nice monitors.

Peak C1 & C2. do not adj. osc C3.



Value of R2 may vary to give approx. .5V drop across R3, for best noise figure.



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W6ORG
(C) 6/80

VM-4 VIDEO MODULATOR

This modulator will drive the 2C39 type tubes with full 5 mhz bandwidth for color and sound subcarriers to 60 watts rf output. It was designed specifically for the Sota EDL432 amplifier as sketched below. This amp is available thru P. C. Electronics and will put out 60 watts with 10 watts drive on 434 mHz. The secret to good color and sound is keeping the plate circuit bandwidth wide and not using too large of bypasses in the grid circuit. Note that a half wave line is used in the plate and that with the cathode driven the bypass cap is only 220 pf. The VM-4 also has DC restoration and 4.5 mhz sound mixed with the video. The DC restorer pot is also the tube bias adjust.

Mount the VM-4 close to the tube cathode. Use wire up to 3" or coax up to 2' from the output of 2N6424 and from the board to the transistor. Heat sink the 2N6424 directly to ground. Set the regulated supply to +24 volts and always turn on first before the tube B+. Set the tube bias pot to about 8 volts at the VM-4 output. With no video in, tune up the amplifier for max rf out. At no time exceed 200 ma plate current, but fine adjust the bias pot for just at max output, and then back down the rf output 10%. Now connect up the video and adjust the video gain pot for best picture received at a distant station or on a monitor from a RF detector such as the DM-1. If neather of these are available, a rough approximation is to increase video gain until the average RF power output is down 30% from no video input. Do not get greedy and set the bias too high or the gain too high or sync clipping or color burst compression may occur.

Other tubes and amplifiers may be used if the plate current is under 250 ma and the cathode/grid bias is between 4 to 10 v. However to get full bandwidth I suggest using the $\frac{1}{2}$ wave plate circuit diagrammed below. Most others are too high Q for good resolution band width. Even the old T44 final can be used for the amp by putting in the plate and cathode circuits below and grounding the grid by removing the grid cap dielectric. A good blower must be added and 750 vdc on the plate to get the full 60 watts output. It can be driven from another old FM rig capable of 10 watts.

VM-4 complete..\$25ppd w/2N6424

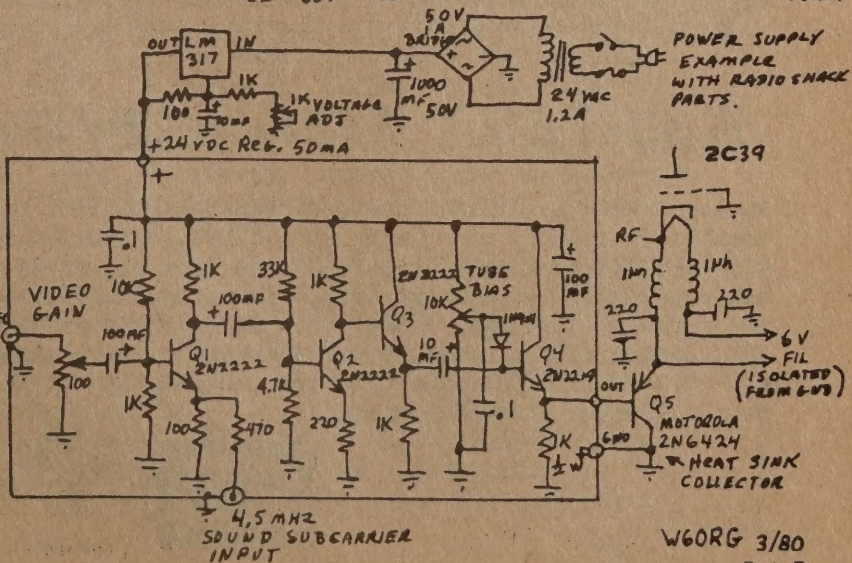
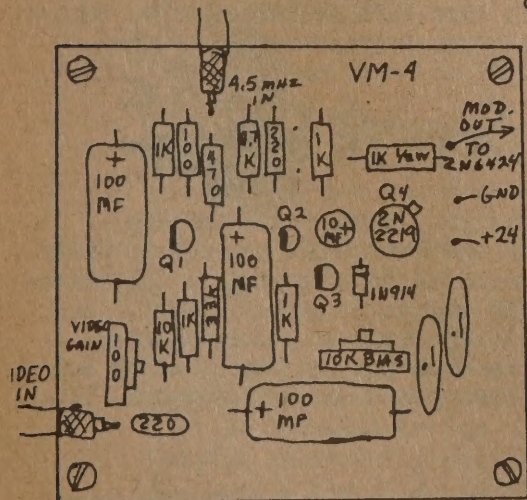
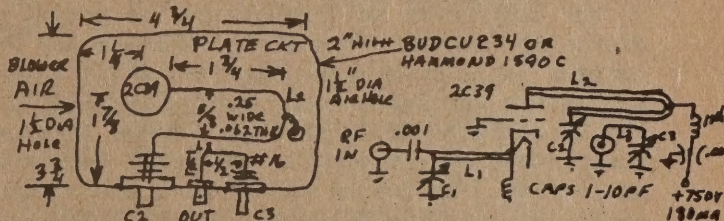
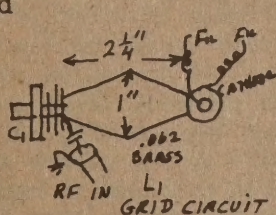
VM-4 pcb only..\$5ppd

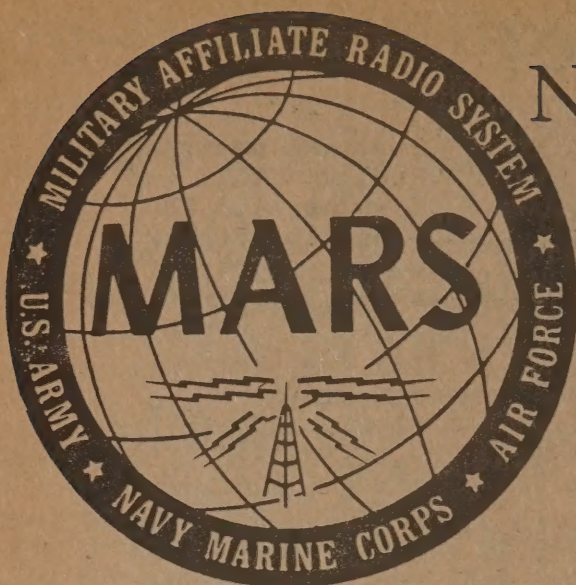
2N6424...\$5ppd

EDL432..\$185

EDL432P..\$420

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DEPARTMENT OF THE NAVY

NAVY-MARINE CORPS

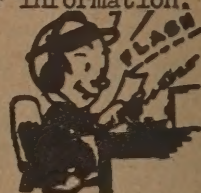
SSTV *video*

The Navy-Marine Corps. MARS played an important part in the pioneering of SSTV. The first SSTV net was started by Capthorne Macdonald in 1966 when he arranged with the Federal Communications Commission for experiments of A5 emissions on the Amateur frequencies while the U. S. Navy MARS membership operated from McMurdo Station, Antarctica. The MARS frequency was MB15 (6970) and ME3 (13.975.5) as is used today. Today, Navy-Marine Corps. MARS SSTV Specialty System is composed of the "cream-of-the-crop" of regular MARS members who have already been experts in handling regular military traffic messages and who have demonstrated a sincere desire to further their services within the

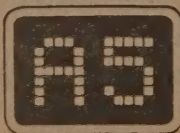
Military complex via Slow-Scan Military Television. The program continues to build in strength and numbers under the direction of NNNØRUH Tom Pollock in Monrovia, California-SSTV Specialty Coordinator. Several SSTV-Nets are held weekly of which interested SSTV'ers with receiver range capability are welcome to "watch". The 4X10X 4th Region Net operates every Wednesday at 6 pm. (CST) on MCL (7.368.5) and on Sundays at 1:30 pm. The CONUS 721X SSTV Net meets on Saturdays at 5 pm. (CST) and Sundays on ME3 (13.975.5) Mhz. Only authorized Military MARS stations of course can transmit at those frequencies. Several times a year, the military and amateur systems meet jointly for the exchange of video pictures and signal reports. For several years now, Armed Forces Day MARS stations operate split-frequency to work the amateur fraternity. A recent special-event station was set up in the lobby area of the Armed Forces Electronic Show/Convention and worked several SSTV stations.

The purpose of MARS-SSTV is for the exchange of video pictures via Slow-Scan Television, to assist military personnel, families, friends and loved-ones. Thousands of messages are passed each month on the regular phone, rtty and phone-patch circuit. But, the SSTV system is the only means to demonstrate the actual relaying of video pictures. A recent helpful assistant Amateur group that completes the routing system within the MARS system, is the Amateur Radio Television Service (ARTS) which has 50 Stateside Directors and countless membership worldwide where 3rd party traffic is allowed. Those interested in joining ARTS should contact WBØQCD in Iowa. Those interested into getting into NAVY MARS should contact their state coordinator or any local MARS member for the proper application forms. As soon as your call is issued and a few hours successful training in handling messages military style, you will be welcomed into the SSTV Specialty Corps. For further information, contact NNNØRUH, (WB6ZYE) Tom Pollock, 243 West Lime Ave, Monrovia, CA.-91016.

AMATEUR RADIO TELEVISION SERVICE



Amateur Radio Television Station ARTS-CE3AUL, Nick in Santiago, Chile, South America completed assembly of a Robot 400 SSTV converter to become the first SSTV station in Chile. Nick will soon be able to relay video from relatives in Chile to those living in the states and especially the Chicago area, where the "Chilean Club of America" exists. It will be the first such working "link" of a DX "ARTS" station which will include phone-patching. ARTS operators work with Navy-Marine Corps. MARS members in assisting in the handling and delivery of SSTV traffic. For more information on ARTS, send a SASE to ARTS Network, P.O. Box H, Lowden, Iowa-52255.



CQ SSTV DE K4TWJ DAVE INGRAM

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Amateur Television Magazine

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Activities in our SSTV ranks continue to increase at an encouraging rate. These activities are not confined to technical advancements; daily on-the-air video operations are also flourishing as never before. DX SSTV signals, propagated by our now-common sunspot counts in the 200 category are assisting worldwide visual exchanges with very low power levels. During a recent evening on 20 meters, for example, 4X4VB and AP2AD were putting through S9 signals. Many SSTVers contacted them - several running less than 100 watts. 15 and 10 meters are also getting their fair share of DX SSTV activity, with the more exciting views emanating from Tom, VR6TC on Pitcairn and Ray, VK9RH, on Norfolk (notice this propagation path corresponds to evening hours after U.S. amateurs eat supper and take to the airwaves - approximately 0030 to 0200 GMT) VR6TC usually operates around 21,340 kHz while VK9RH has been preferring 21,285 to 21,295 kHz. When the activity swings to 10 meters, the frequency is usually 28,680⁺ QRM. Jimmy, VU2IJ should also be starting his SSTV operations by the time you read this. Jimmy, VU2IJ, and Ahmed, AP2AD, are close friends. When you find one, the other is usually nearby. Try 14,220 to 14,230 kHz around 0100 GMT for these two. AP2AD's signal is usually quite strong while VU2IJ is often weak.

On the "technical side of SSTV", so many things are happening that it's difficult to keep track of them all. Color SSTV with two memory-equipped scan converters (usually Robot 400's) is growing in popularity. Don, W9NTP, has some Robot 400-compatible "second memory boards" available to interested parties. Don is usually on the 14,230 kHz SSTV Net Saturdays at 1800 GMT. Medium Scan TV is also progressing, although presently slower than desired or expected. This system can open a complete new ball game for 21st Century personal visual/data communication links. Seriously, MSTV can become a mere tip of the iceberg once the public at large realizes its capabilities. If you would like to become involved in this frontier, Don, W9NTP, is again the "spearhead" to contact.

THE SAGA OF VK9RH'S SSTV GEAR

As you may recall, our recent drive to get VR6TC active on Slow Scan TV resulted in a second full video setup which was allocated to Ray Hoare, VK9RH. Ray now has the gear operating in fine style, however the story behind this gear's travels still deserves memorable mention. The original equipment donor (whom asked that I keep his name anonymous) sent the like-new Model 70 Monitor and Model 80 Camera to Robot for overhaul and setting up on 50 Hz for VK9RH. After that, Robot sent the gear to Ralph, W6IL for transportation arrangements to Norfolk. The strings Ralph then pulled were quite numerous: we'll try to recap them. The SSTV camera was carried by Bob, W6PG, aboard the Yankee Trader to Sydney, Australia. Then, John, VK2XY shipped the camera to Norfolk via air express. That was the first item Ray received.

During a 15 meter roundtable of U.S. and DX SSTVers, Ralph, W6IL, learned that Fred, WB7QHV, was traveling to Auckland, New Zealand. Fred agreed to take on the SSTV monitor in California as cabin baggage. When Fred arrived in Auckland, he contacted several ZL's, including Barry, ZL1BQM. Since Barry is an airline pilot flying to Norfolk, he then carried the monitor to VK9RH the next week. Talk about travels!! Fortunately, everything went perfectly, and both Robot items arrived intact. Ray had a few minor problems adjusting the units and cabling them to his rig, but all's now doing well. Ray is having a ball with SSTV and trying

his best to give everyone an SSTV contact with Norfolk. It seems he's really "knocking himself out" to return the (SSTV) favor - even to the point of sacrificing personal interest to please SSTVers worldwide.

One of the main men behind the scenes in these operations is Ralph Cabanillas, W6IL. Ralph spends a vast amount of time each day working with and for many amateurs; two of the most important being VR6TC and VK9RH. Ralph "looks over" the communications and needs of these countries with true diligence. Our hat's off to him for an extremely outstanding job and perpetual efforts.

THREE SSTV NETWORKS NOW OPERATIONAL

That's right, gang, there's now three SSTV Networks actively involved in exchanging SSTV ideas and views on a widespread basis. With all this assistance, there's precious little chance of anyone becoming bored, disenchanted or uninformed on SSTV. Like Alice's Restaurant, you can find almost anything you want in one of these networks (the term "net" sounds too traffic and roll-call orientated to me, personally. No offense intended). The Saturday SSTV Network is the "old standby" or classic gathering which meets on 14,230 kHz at 1800 GMT. Net controls are W1JKF, W9NTP, WD4DCW and W0LMD. If you're around your rig Saturdays, check over network activities. They're quite diversified and interesting.

The 10 meter SSTV network originally began operating at 1800 GMT on 28,680 kHz. The purpose of this network is to provide general class SSTV assistance plus provide assistance to disseminating information from the 14,230 kHz network. Unless one owned a memory-equipped and broadbanded (no tuneup), checking into both networks was a hassle. I understand the 28,680 kHz network has now shifted its starting time to 2000 GMT to alleviate that problem. Mike Stone's column should have more information on this network.

The Thursday night SSTV network gathers on 14,230 kHz around 2330 GMT. The usual network controls are N7AON and WD4DCW. In addition to exchanges of technical information, some exciting DX stations check into this network on a substantial basis. Possibly this is due to the prime-time operation of the net. If you want to realize maximum enjoyment from SSTV operations, networks will surely fulfill that bill. Their high ratio of views to operating time is, indeed, hard to beat.

TRS 80 SSTV PROGRAM

We understand that Jack Shepard, W8OMY, 376 Danhurst Road, Columbus, Ohio 43228, has some SSTV programs available on cassette for use with the Radio Shack TRS80 computer. These programs allow the TRS80 to function as an SSTV keyboard. I'm not sure if Jack also has an SSTV VCO compatible with the TRS80, or if the computer outputs directly into one's existing SSTV generator. Any rate, the program has some elaborate features and is surely worth the eight dollars (plus postage) which they cost during May (inflationary times - I hesitate to quote any prices!)

WRAP UP

That's about it for this time, gang. We will be looking for your video on the SSTV frequencies, so get on the air and let me see more video exchanges. Maybe one or two SSTV QSO parties should be initiated. What's your opinion? I understand that our fearless leader, Henry, KB9FO now has one of the new Robot super terminals. Maybe he'll be passing along his thoughts on it soon. 73, Dave Ingram, K4TWJ, Eastwood Village #1201 South, Rt. 11, Box 499, Birmingham, Alabama 35210.

DO IT ON — VIDEO !



MILITARY AFFILIATE RADIO SYSTEM

NAVY-MARINE CORPS

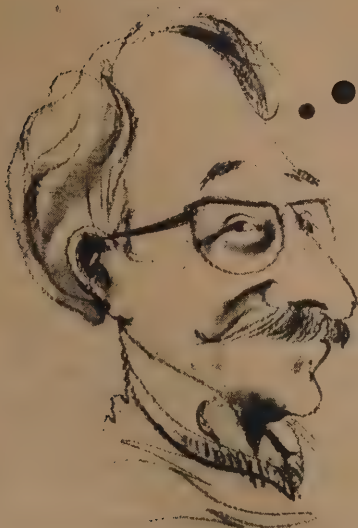
SLOW-SCAN TELEVISION BY NNNØAWF-IOWA

SSTV



Do you have a few spare hours per month to further expand your Amateur Radio SSTV station capability? Would you like to become part of a "team" made up of other ham radio operators assisting the military in various forms of traffic? Does a phone-patch into Antarctica picking up a message for a neighbor in your own home town sound exciting? Then Navy-Marine Corps. MARS is for you!

NAVMARS offers many traffic handling programs starting from the local level of handling messages within your state, radioteletype (RTTY) networks and broadcasts, overseas phone-patching systems, CW nets and broadcasts, Slow-Scan Television relay systems and even VHF repeaters. SSTV networks have been in operation for many years and have seen actual transmitting and receiving of "video-traffic" from overseas bases, ships-at-sea and other military installations. Military Television operates just under the allotted Amateur Twenty Meter spectrum and above the Forty Meter band. MARS-TV cooperates fully with the Amateur Radio Television System (ARTS). For further information, contact NNNØRUH (WB6ZYE)-Tom Pollock, 243 West Lake Ave, Monrovia, CA.-91016 or your local state MARS program. Ask them about the NAVMARS SSTV Specialty Program.

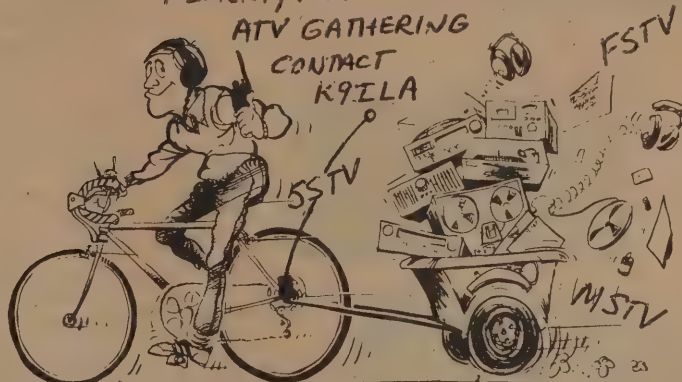


Are
you
Ready?

BRING ALL THE GEAR TO THE
PEORIA, ILL. "SUPERFEST" SEP 20-21

ATV GATHERING

CONTACT
K9ILA



KB9FO CESSNA FLYBY ON ATV!

SSTV

Television

NAVY - MARINE CORPS MARS

WEDS.	6PM (CST)	7.368.5 MHZ
SAT.	5PM (CST)	13.975.5 MHZ
SUN.	5PM (CST)	13.975.5 MHZ
SUN.	1:30 PM.	7.368.5 MHZ

For more information contact

NNNØAWF

P.O. Box H, Lowden, Iowa 52255



He does not have a sub-
scription to A5 Magazine!



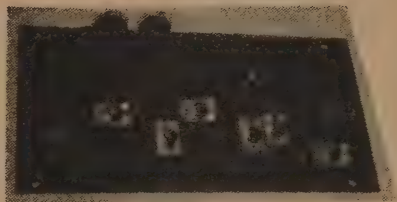
He has a subscription to
A5 Magazine!

P.C. ELECTRONICS

JUNE 80 CATALOG OF PC BOARDS AND MODULES FOR YOUR COMMUNICATIONS SYSTEM

Solid State Fast Scan ATV Modules

The Basic Four Modules



1. TXA5-3 ATV EXCITER/MODULATOR \$85 ppd

This wired and tested module is designed to drive the Motorola MHW-710 module in the PA5 10 watt linear amp. The crystal in the 100 mHz region keeps harmonics out of two meters for talk back. The video modulator is full 8 mHz for computer graphics and color. Requires 13.8 vdc reg @ 70 ma. Tuned with xtal on 439.25, 434.0, or 426.25 mHz.

Two Freq version add \$30.

CA-1 video carrier audio/18 mhz osc add \$49



2. PA5 10 WATT ATV POWER MODULE \$79 ppd

The PA5 will put out 10 watts RMS power on the sync tips when driven with 80 mw by the TXA5 exciter. 50 ohms in and out, plus bandwidth for the whole band with good linearity for color and sound. Requires 13.8 vdc regulated @ 3 amps.



3. FMA5 AUDIO SUBCARRIER GENERATOR. . . \$25.00 ppd

Puts audio on with your camera video just as broadcast TV does at 4.5 mHz. Puts out up to 1 v p-p to drive the TXA5 or VM-2, 3, or 4 modulators. Requires low Z mic (150 to 600 ohms), and +12 to 18 vdc @ 25 ma. Works with any xmtr with 5 mHz video bandwidth.



4. TVC-2 ATV DOWNCONVERTER \$49.50 ppd

Very sensitive MRF901 (1.7 db NF) preamp and double balanced mixer module digs out the weak ones but resists intermods and overload. Connects between uhf antenna and TV set tuned to channel 2 or 3. Tunes 420 to 450 mHz. Requires +12 to 18 vdc @20 ma.

Super sensitive TVC-1C with NE64535 preamp (.9db NF) preamp \$79.50 ppd

CH 2 or 3 AMPS NOW AVAILABLE...PCH3VD...\$28 ppd



TVC-4 ATV DOWNCONVERTER \$85.00 ppd

This is a packaged version of the TVC-2 converter with internal power supply. Has BNC input and F output connectors.

Also available with the NE64535 for \$115 ppd

Size: 5 1/4 X 2 1/2 X 7 inches.

..... Package Specials

TXA5-3, PA5, FMA5, and TVC-1b basic module package \$225 ppd

OPTIONS: 2 frequency exciter add \$30
NE64535 low noise downconverter add \$30
Packaged TVC-4 downconverter add \$35
Less TVC-1b downconverter subtract \$40
10% discount on 5 or more of one module ordered at one time to one address.

FAST SCAN ATV

ALL YOU NEED IN ONE BOX



Connect to the ant. terminals of any TV set, add a good 450 antenna, a camera, and you are there . . . Show the shack, home movies, computer games, etc.

FEATURES

- 10 WATTS RMS OUTPUT ON SYNC. DC RESTORED MODULATOR.
- STANDARD FREQ. AVAILABLE: 439.25, 434.0, AND 426.25 MHZ SPECIFY XMTR FREQ. AND DOWN-CONVERTER OUTPUT ON CHANNEL 3 OR 2.
- BROADCAST STANDARD 4.5 MHZ SUBCARRIER SOUND WITH HIGHGAIN MIC AMP.
- 8 MHZ BANDWIDTH MODULATOR FOR HIGH RESOLUTION VIDEO, COLOR, AND COMPUTER ALPHA-NUMERICS.
- BUILT-IN REGULATED AC POWER SUPPLY.
- TUNEABLE DOWNCONVERTER COVERS 420 to 450 MHZ. CONTAINS LOW NOISE 1.7 DB MRF901 PREAMP, PLUS HOT CARRIER DOUBLE BALANCED MIXER.
- STILL \$399 DELIVERED USA VIA UPS. TWO FOR \$750, OR 5 OR MORE 10% OFF.

Our terms are Visa or Master Charge by phone or mail, or check or money order by mail. We do not believe in surcharging hams the cost of unnecessary paperwork from purchase orders, CODs and their returns from unhappy housewives, or unpaid invoices, or dealer markups. We try to give you the lowest price possible to promote Fast Scan ATV.

Send self addressed stamped envelope for our latest 6 page ATV Catalog and info.

P.C. Electronics, 2522 S. Paxson Ln., Arcadia CA. 91006

OPTIONS

- PROVISION FOR EXTERNAL 12 TO 14 VDC FOR MOBILE OR PORTABLE\$30
- DM-1 RF/VIDEO DETECTOR MONITOR INSTALLED WITH BNC OUTPUT\$30
- ON CARRIER AUDIO MODULE CA-1 INSTALLED FOR THOSE AREAS THAT DO NOT USE STANDARD SUBCARRIER OR TWO METERS FOR AUDIO . . . \$50
- TWO FREQUENCY EXCITER INSTALLED WITH XTALS ON 439.25, 434.0, OR 426.25. NOT AVAILABLE WITH CA-1\$40
- EXTRA LOW NOISE DOWNCONVERTER WITH NE-64535 PREAMP STAGE\$30

★ IF YOU WISH TO BUILD YOUR OWN SYSTEM, SEE THE BASIC 4 MODULE PACKAGE.

* We also handle J Beam antennas, Hitachi Cameras, monitors, and more.

TOM W6ORG
MARYANN WB6YSS
213/ 447-4565

AMATEUR RADIO TELEVISION SERVICE PROCEDURES

SSTV

TRAFFIC OPERATING GUIDELINES

SSB

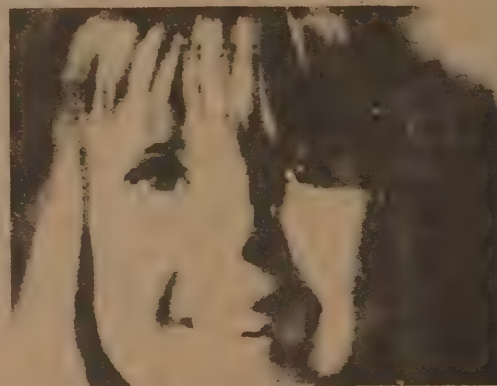
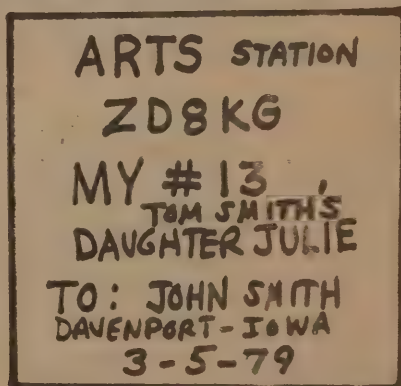
The most important task of handling ARTS Video-traffic is to obtain the best picture quality possible and proper frame identification. We need not expound on how best to obtain CCTV pictures-you are experienced SSTV operators and would not have been chosen if you hadn't already demonstrated the capability. Use 256 line transmissions when possible under adverse conditions (or 128 half-speed conversions). Allow a minimum of 10 frames per picture sequence. We are not in the business of quantity of SSTV pictures as used on the Amateur spectrum, but rather "quality". Use the standard RSV video reporting system and be accurate in readings and reports.

SSTV Frame Identification becomes very important in this type of traffic relaying. As the traffic gets relayed from one ARTS station to another, and possibly via non-ARTS stations, it becomes easy to lose identification that corresponds with the video picture. The following information should always accompany SSTV pictures preceding the actual transmission of the subject matter.

- . ARTS Station ID Callsign
- . Name of subject matter and ARTS Traffic Number sequence
- . Destination point (place or person)
- . Date of Picture taken (sitting)

Example: ARTS DX Country Station ZD8KG, Kent on Ascension, Island initiates a photo of a base employee on March 5th, 1979 and transmits this traffic to ARTS State Director in Maine, W1WS Connie. Connie-relays the traffic and relays it over to State Director for Iowa, WBØKFB Jim in Cedar Rapids. Jim relays to the nearest SSTV station (ARTS or non-ARTS if no ARTS is available) in Davenport, Iowa. When the traffic has indeed been completed, a written message is sent back to ZD8KG by regular Amateur or MARS traffic NETS established notifying the originator of reception. (Return traffic is encouraged since in most cases, the party contacted will come out to the ARTS station's "shack" to view the pictures). Entire programs can be handled via videocassette mailings. Use of Phoneline Television encourage when possible. Hamfest etc. gatherings encouraged. Reports of traffic relays, origination and destination are to be filed with the State Directors in each situation. In otherwords, ZD8KG will file his traffic originated with his Country Director, W1WS will file with her State Director, WBØKFB will file his relay with the Iowa State Director and so on. The various Directors involved will in turn report traffic handled on ARTS NETS. This system must be adhered to at all times for proper message and traffic handling assurance.

TYPICAL
A.R.T.S.
VIDEO
RELAY



10+
Frames

It is not necessary to go thru State Directors, but reports must be filed on activity.

ARTS Video-traffic may be handled by non-ARTS stations only when the availability of registered ARTS is not possible due to band conditions or geographical limitations. Be sure to explain the ARTS program and procedures fully to non-ARTS stations and of course extend an invitation to join.

ARTS 10-point accompanying message system used on Video-traffic relays:

- ARTS-1 Originating Station Callsign
 - ARTS-2 Video-traffic number
 - ARTS-3 Title of Picture(s)
 - ARTS-4 Date of production
 - ARTS-5 Subject address-information (for possible reply)
 - ARTS-6 Destination requested of traffic (include complete address/phone)
 - ARTS-7 Is a reply requested? (Answer affirmative or negative)
 - ARTS-8 Relay stations involved with this traffic
 - * ARTS-9 Terminating ATV Station closest to traffic destination
 - * ARTS-10 Was the traffic delivered ?
- *used only by the terminating station.

*Occasionally, the traffic is undeliverable. Report as "undeliverable" and state reason why under ARTS-10 (Party unable to be contacted, unable to get together with SSTV station, picture quality destroyed, etc.)

IT IS IMPERATIVE THAT THIS ARTS 10-POINT MESSAGE SYSTEM BE FOLLOWED FOR EACH PIECE OF VIDEO-TRAFFIC HANDLED TO ASSURE PROPER INFORMATION DISSEMINATION.

Reports of ARTS traffic handled, whether assisting as a relaying station, originating station or terminating station, must be reported to the State or Country Director in either written or verbal form. This completed information is compiled at the end of each month and reported to the ARTS Director. Various established Amateur Traffic Systems (NTS) may be used for the passage of these reports as well as MARS and ARTS regular NETS.

ARTS publicity is encourage thru use of newspaper media stories and announcements, word-of-mouth advertisement on the Amateur bands, and of course at all ham-fests, gatherings, expeditions and club meetings. Press releases are available thru the ARTS Director. Forward any publicity attained to your Director.

ARTS traffic reports are reported monthly by the ARTS Director to K1XA, Robert Halprin, American Radio Relay League QST "Public Service" Column editor. Public Service recognition awards are made to those individuals who demonstrate success in promoting Amateur Radio to the general public.

CLASSES OF ARTS TRANSMISSIONS

Class A----Live direct transmission to receiving ATV station with designated public viewing (Two-way exchanges).

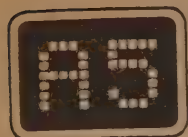
Class B----Transmission of Live or Taped video-traffic thru relays.

Class C----Complete or partial transmitted-cassette mailing service.

Class D----Fast Scan Television transmission direct.

Class E----FSTV Videocassette mailing service.

AMATEUR RADIO TELEVISION SERVICE

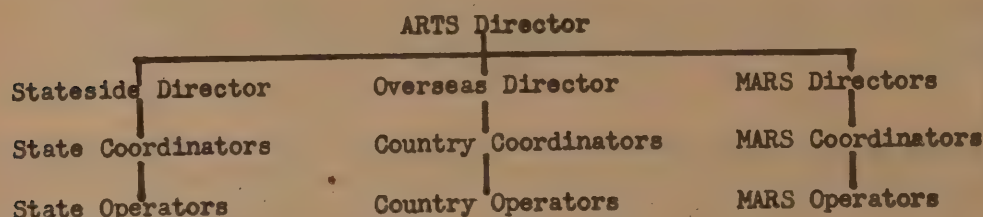


PUBLIC SERVICE VIA AMATEUR RADIO

A.R.T.S.

AMATEUR RADIO TELEVISION SERVICE (A.R.T.S.) is an organization composed of devoted, volunteered, specialized communications experts bringing together peoples of the world via Slow-Scan Television. Founded in the fall of 1979, an ever growing, select group of individual registered ARTS operators is making possible visual communications between friends, relatives and loved ones through out the world-never before possible in Amateur Public-Service communications.

ARTS is structured into 3 categories; Amateur Stateside Division, Amateur Overseas Division and Military MARS Coordination. There are 50 State Directors, Unlimited number of DX Country Directors and 3 MARS Coordinating Directors.



ARTS Registered Relay Stations handle FSTV/SSTV/Phoneline TV as well as videocassette mail-service. ARTS operates at standard Amateur SSTV frequencies with a primary operating frequency of 28.680 on the 10 Meter Amateur Band and 14.230 on the 20 Meter Band. ARTS meets on Wednesdays, Saturday and Sundays at regular NET times.

ARTS needs registered operators. Some State Director positions are still available. Many new DX Country Stations are requested. Can you donate a few hours per month for this rewarding and satisfying opportunity? Can you imagine the smile on that service-man's mother when she sees her son on duty in Europe? Or the grandparent as they see that newborn grandchild for the first time? The possibilities are endless! Complete the information below and return to your nearest Director.....

YES! SIGN ME UP FOR ...

Amateur Call sign _____

MARS Call sign _____

Please register me for a position in the

A.R.T.S. Network. I possess the prpper needed A5 SSTV equipment to handle ARTS relay traffic. My primary SSTV operating frequency is _____ Mhz. FSTV? _____

Name

Address

City and Zip

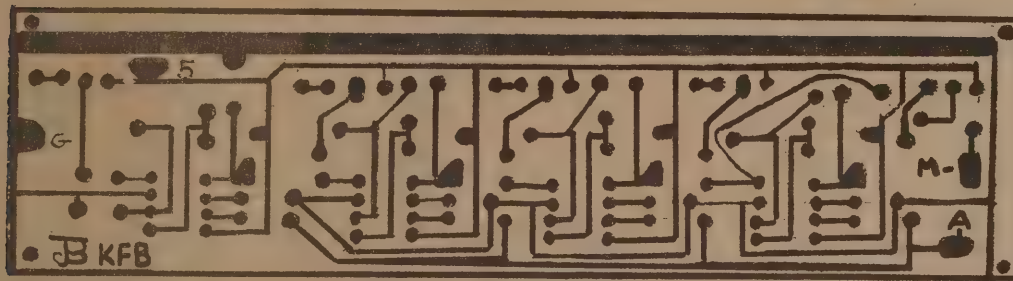
I have the following ATV gear and HF equipment: (Remarks)' Phone _____

Assigned to Director _____ Position _____

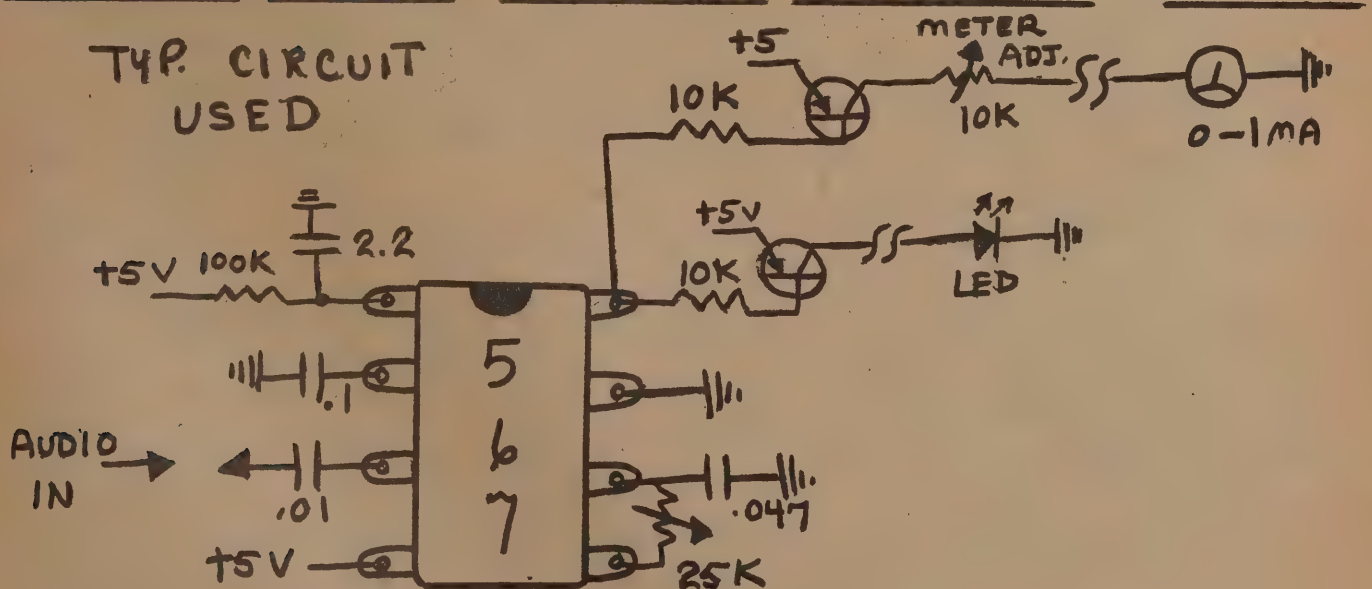
Return to: _____

SIMPLE SSTV TUNING CIRCUIT by W9FHB

Applying the tuning principles used in radioteletype to properly align the audio mark and space signals frequency in the terminal demodulator, this circuit allows precise correct tuning of the SSTV sync-reset signal (1200 hz.) of the station received by the aid of meter tuning as well as LED indication of the various levels of grey scale received. Four chips must be used for various levels of grey scales setting the 25K pot to 1500 hz.-Black etc. All parts for the circuit are easily obtained including the meter which may be found at any Radio Shack (TM) outlet. +5 volts DC should be obtainable from most SSTV converters. Autek Research, Inc. (makers of the audio filters advertised in QST) use a cabinet that matches the ROBOT 70 and 400 series cabinet style and color in their products that might be obtainable from them or their manufacturer. Another good looking cabinet is the "B" Dosey unit. For the extended four-chip circuit, a printed circuit board may be obtained from SSTV'er WBØKFB, Jim Buttleman, 419 23rd St NE, Cedar Rapids, Iowa 52402 for \$5.00 which includes return postage. Thanks to WBØQCD for promotion of this circuit.



— Foil Side —



NOTE: THE METERING CIRCUIT IS USED ONLY ONCE -
THE LED CIRCUIT IS USED AGAIN FOR THE OTHER
SHADES.

CROSS A5 WORDS

Fast Scan TV

SSTV

RTTY

ACROSS

- 1,7 Experimental TV
- 11 Intergrated circuit component
- 13 FCC recently approved
- 14 CW tool
- 15 What you have on ATV
- 16 CW abr. between text
- 17 Moonbounce term
- 18 Potentiometer
- 20 Commonly used on FSTV
- 21 Rtty'ers do this
- 22 XYL term for Atv'ers
- 24 A must piece of gear
- 27 Tune with this on SSTV
- 31 E=
- 32 WAAOAA state abr.
- 33 Used alot on SSTV
- 35 variable picture control
- 38 FSTV allowed there
- 42 World's longest DX country
- 44 undesirable reflection
- 47 TV mode-makeup
- 49 Boats used in WWII
- 50 propagation "catcher"
- 51 transistor type
- 54 Robot status of memory
- 56 attachment for lens

DOWN

- 1 Famous DX Column editor
- 4 Intergrated circuit
- 5 Band used by Fast Scanners
- 7 Mode
- 8 Internal video-receiver
- 11 former president
- 12 type of transistor
- 19 opposite of "off"
- 21 possibility with "hot" finals
- 23 transmitter in RTTY
- 24 clarifier control
- 26 _____ the plate
- 28 publishers state abr.
- 29 we do this on camera
- 39 American pastime
- 42 person you'd call on burglary
- 46 teleprinter communication
- 48 termination
- 49 Pony's of America
- 50 Auto club

CAN YOU COMPLETE THIS? CORRECT ENTRIES
WILL BE DRAWN FOR A WINNER! WIN 1 YEAR
FREE SUBSCRIPTION TO A5 MAGAZINE !!!!!

Subscriber and immediate family eligible.

All entries must be postmarked by Sept 1st.
Winner and completed puzzle to be published
in the fall issue.....Good luck!



Amateur Television Magazine

DEVOTED TO HAM TV

P. O. Box 1347 Bloomington, Indiana 47402

NAME _____ CALL _____
STREET _____
CITY _____ STATE _____ ZIP _____
START WITH THE _____ ISSUE.

BONUS question for an extra year for winner: Who was the TV star who played Wonder Woman before Linda Carter?? _____

TALLY FORM

A5 MAGAZINE "WORKED-ALL-STATES" AWARD

SSTV

CALL SIGN _____ NAME IN FULL _____ ADDRESS _____
 CITY _____ STATE _____ CLASS LICENSE _____ ZIP _____

I CERTIFY THAT THE GIVEN INFORMATION IS FACTUAL AND TRUTHFUL AND HAS BEEN ACCOMPLISHED VIA LEGITIMATE TWO-WAY SSTV (A5) TRANSMISSIONS.

Signature _____

State	Call	Date	Band	R. S. V.	REP. LINE, TAPE
Alabama					
Alaska					
Arizona					
Arkansas					
California					
Colorado					
Connecticut					
Delaware					
Florida					
Georgia					
Hawaii					
Idaho					
Illinois					
Indiana					
Iowa					
Kansas					
Kentucky					
Louisiana					
Maine					
Maryland (D. C.)					
Massachusetts					
Michigan					
Minnesota					
Mississippi					
Missouri					
Montana					
Nebraska					
Nevada					
New Hampshire					
New Jersey					
New Mexico					
New York					
North Carolina					
North Dakota					
Ohio					
Oklahoma					
Oregon					
Pennsylvania					
Rhode Island					
South Carolina					
South Dakota					
Tennessee					
Texas					
Utah					
Vermont					
Virginia					
Washington					
West Virginia					
Wisconsin					
Wyoming					

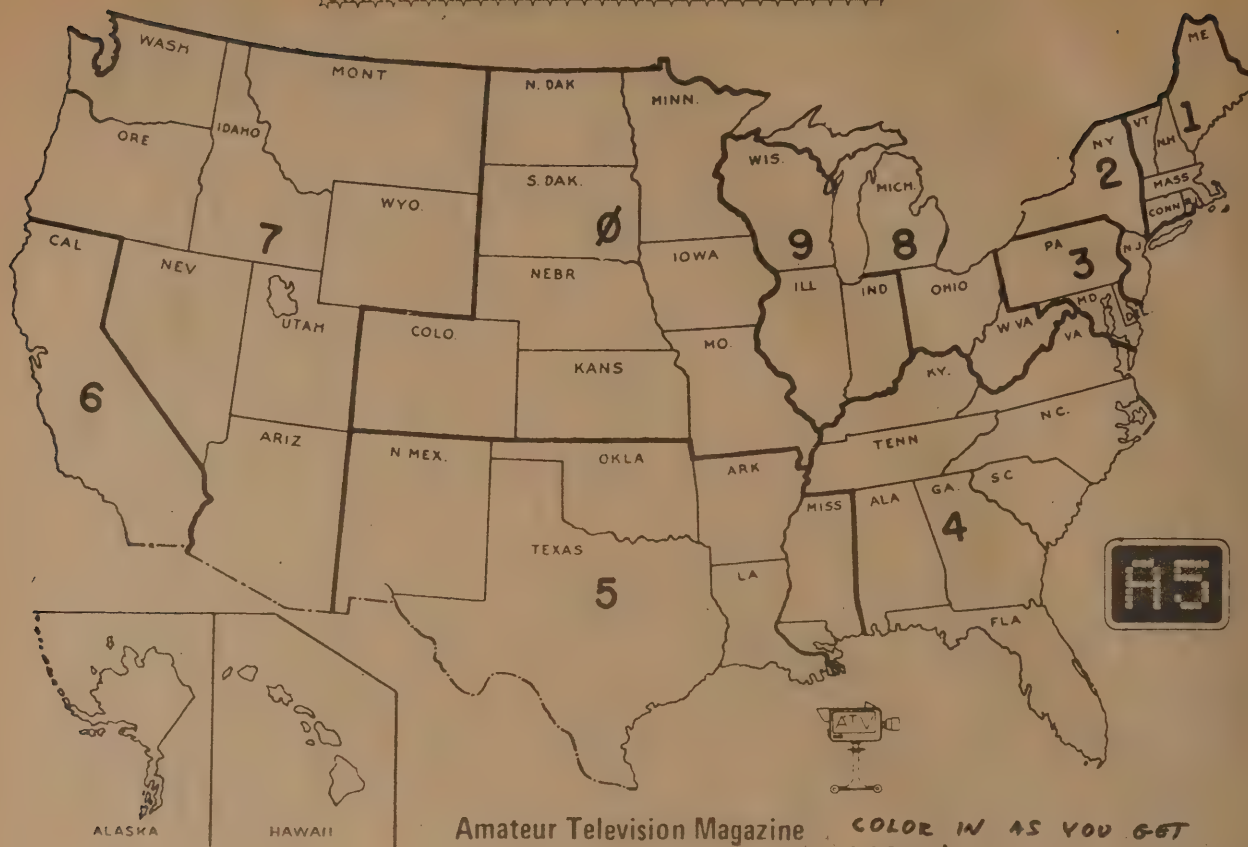


Amateur Television Magazine

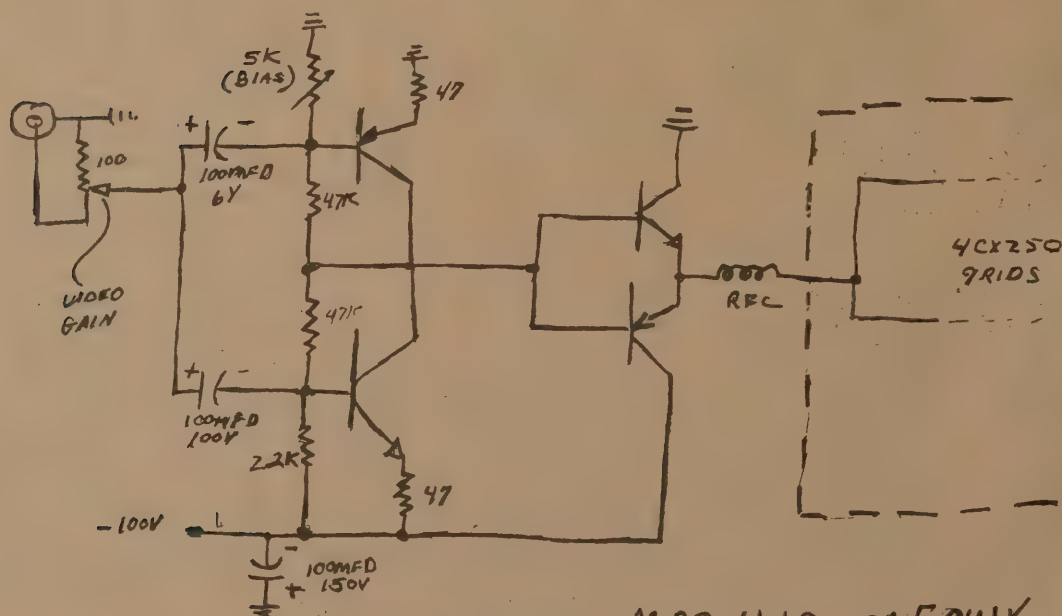
DEVOTED TO HAM TV

P. O. Box 1347 Bloomington, Indiana 47402

Amateur Radio WAS SSTV



COLOR MODULATOR FOR 4CX250BS (with Bias.)



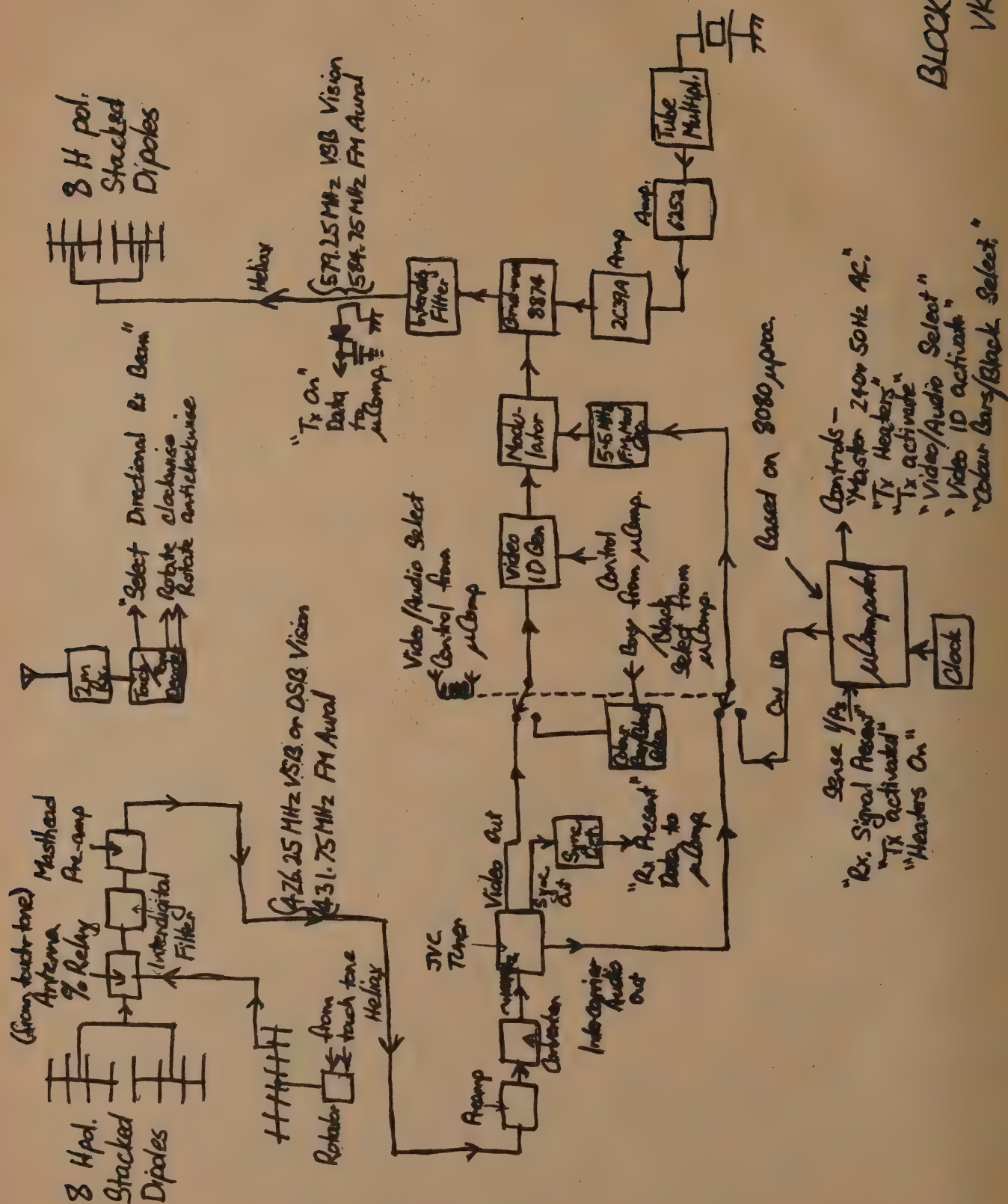
ALL RESISTORS 1/2 WATT

MOTOROLA MPS U10 OR EQUIV
" MPS U60 "

HEAT SINK TRANSISTORS

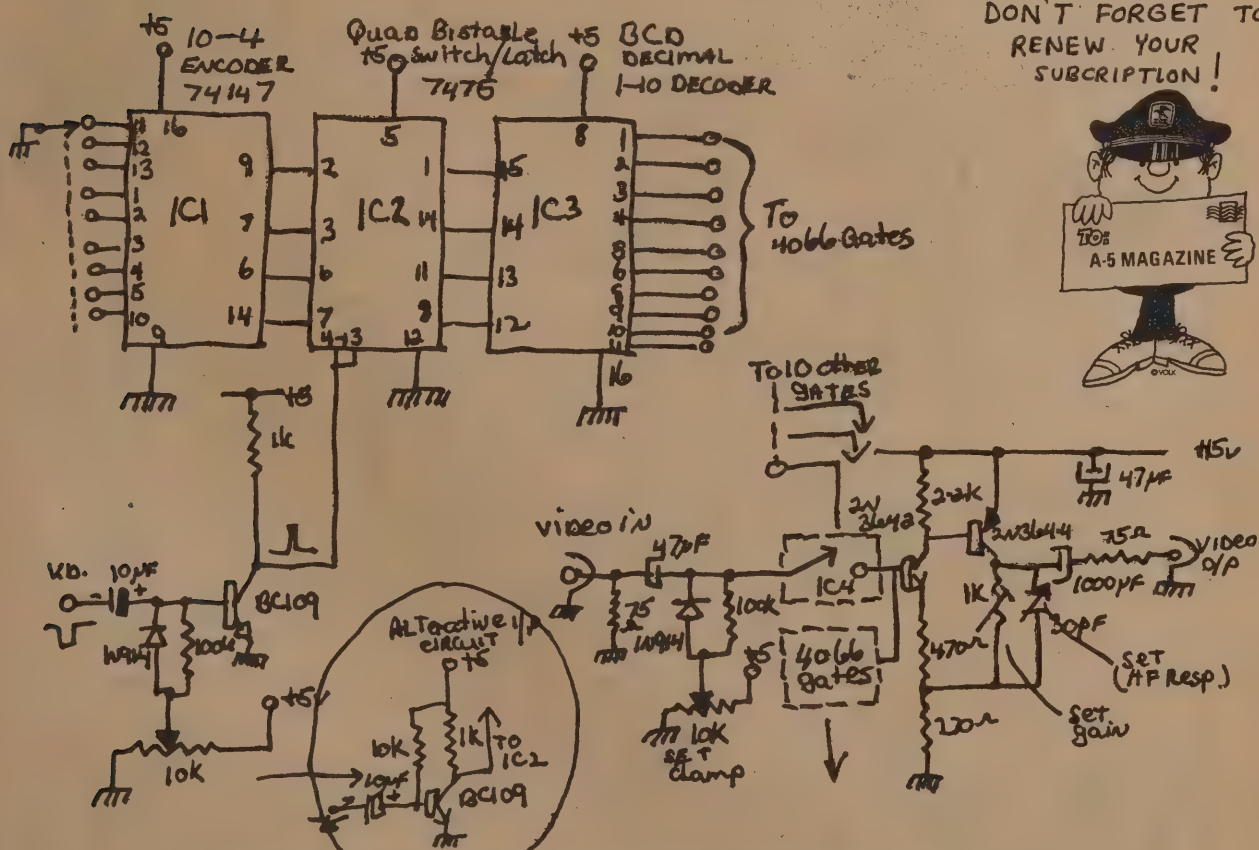
CAN USE HER 710 (PNP)
ECG 154 (NPN)

BY K9KK



BLOCK DIAGRAM
VK5RTV

Ray Foxwell VK5ZEE

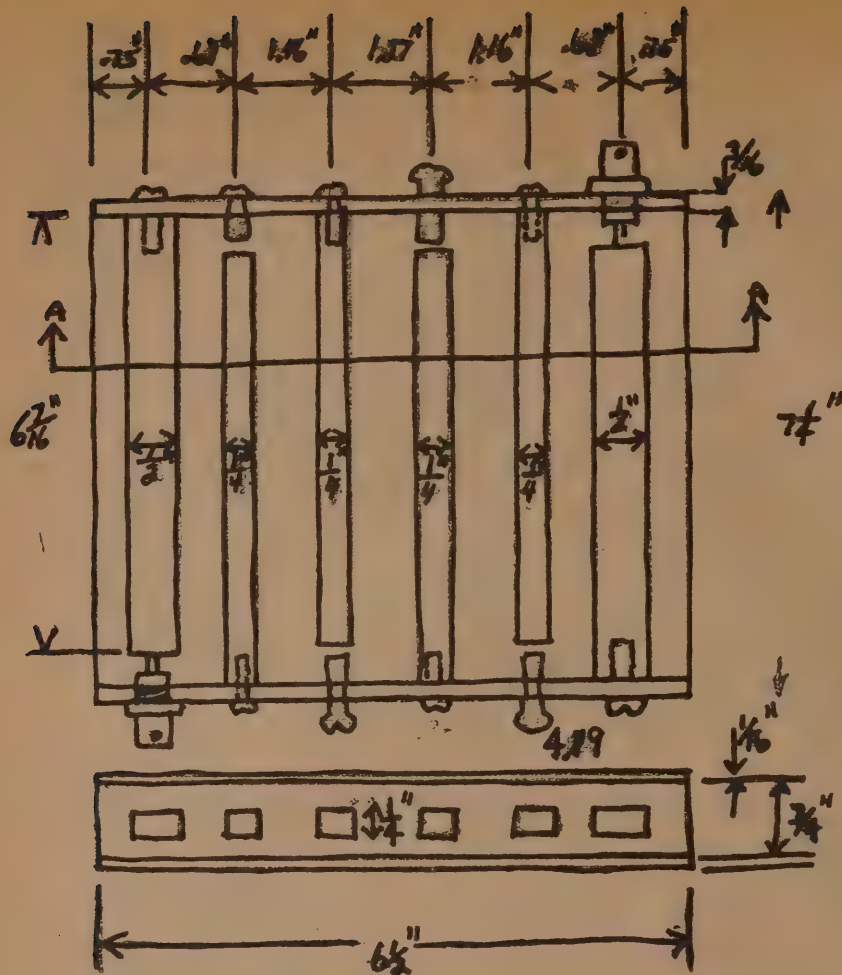


DON'T FORGET TO
RENEW YOUR
SUBSCRIPTION!



10 CHANNEL VERTICAL INTERVAL SWITCHER

By VK5KG

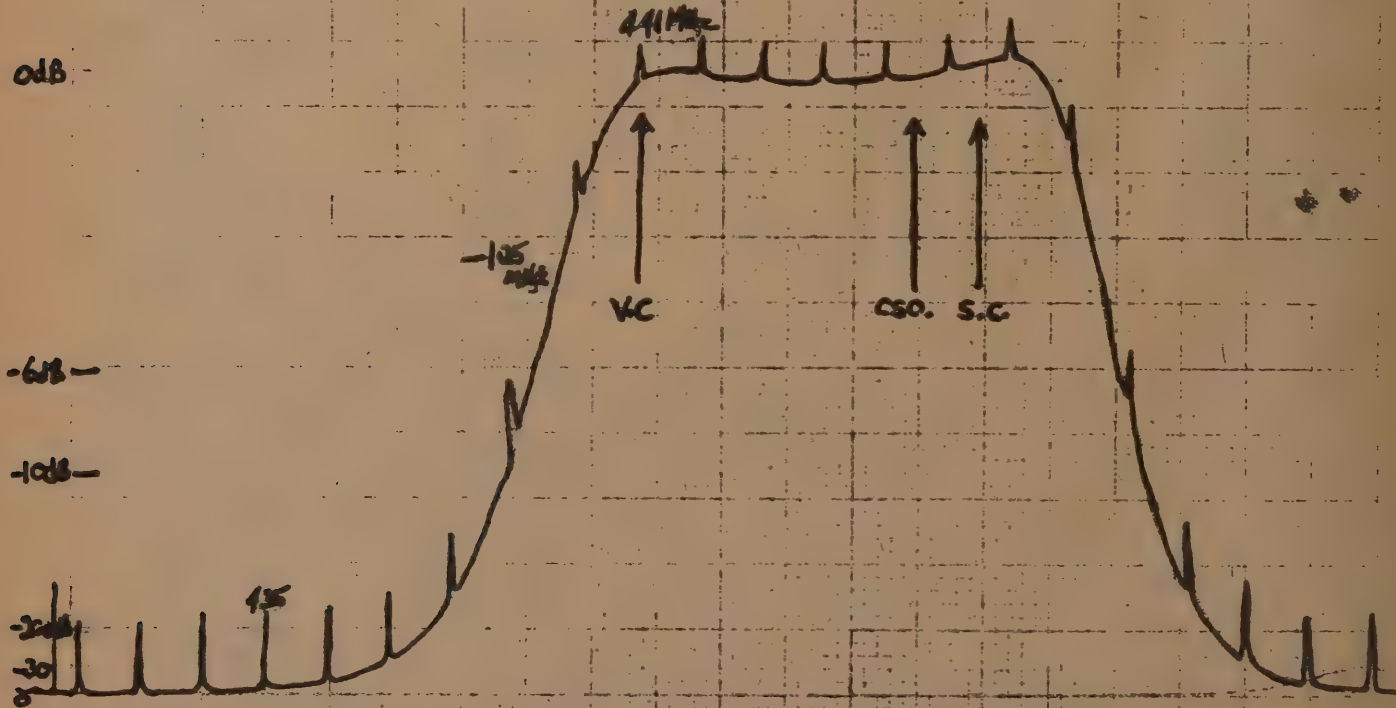


3dB BW 2%
1dB insertion loss

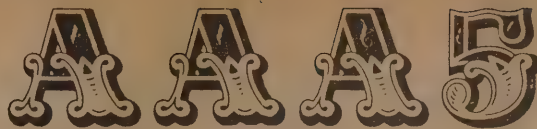
4 STAGE
INTERDIGITAL
SIDE BAND
FILTER

LONG TURNER
VK5ZHL

SWEEP FREQUENCY
RESPONSE
4 STAGE
INTERDIGITAL
FILTER



1cm PER DIVISION
MARKING



TV News

By Bill Munsil, N7AOU

A new Amateur Radio ATV club has recently been formed, and is called Arizona Amateurs on Television (A5 = Television). The club meets on the 2nd Thursday (usually) of each month, with the place to be announced. The club now has 15 paid members of which 3 are now ready to transmit ATV on the 450 band.

Future plans of this club are to build and install a cross band ATV repeater on 1282 Mhz/2380 Mhz. The repeater will include provisions for allowing full duplex operation and single station signal checks, where a number between 0 and 99 will be superimposed on the signal indicating the relative signal strength of the station using the repeater. If full duplex is run, the user can see his own signal coming back from the repeater with this strength number appearing on his TV screen.

Other plans call for touch tone access selection of 16 different test patterns for TV receiver testing, and for ASCII and BAUDOT reception and retransmission. We are also exploring the possibility of a 450 in band repeater. We are now operating on 434 Mhz simplex with sub carrier sound and expect to eventually move to what ever frequency is coordinated for statewide ATV simplex.

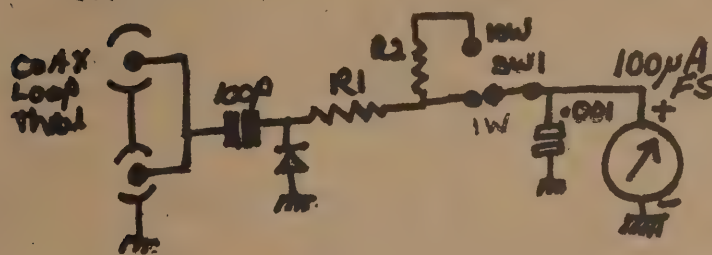
For more information about this new club and its activities, check with any AAA5 member or Myself. We usually monitor the ARA 34/94 repeater.

CU ON ATV
UL C ME
Bill Munsil, N7AOU/ATV
Founding President

NOW 21 MEMBERS
AS OF 7-24-80

A POWER METER FOR ATV.

Circuit



BY GRANT WILKES
VK5ZCA.....

	R1	R2
50 Ω	100k	220k
75 Ω	120K	270k

1/2 or 1/4 W 5% TYPES

A SIMPLE POWER METER FOR ATV.....

THIS CIRCUIT WAS DEVELOPED TO PROVIDE A REASONABLY ACCURATE IDEA OF POWER OUTPUT AND POWER GAIN OF VARIOUS EXCHANGERS AND POWER AMPS AROUND THE SHACK. THE MAJOR CONSIDERATIONS IN ITS USE IS TO MAINTAIN A LOW SWR ON THE FEEDLINE, DUMMY LOAD ETC FOR BEST ACCURACY.

BUT MY UNIT STILL GIVES A READING WITHIN 20% WHEN AN SWR OF 2:1 IS PRESENT. IT CONSISTS ESSENTIALLY OF A PEAK-READING VOLTMETER CIRCUIT WITH A SEVENT DIODE DETECTOR WITH A FAIRLY HIGH IMPEDANCE VOLTMETER CIRCUIT.

VALUES ARE GIVEN FOR 50ohm AND 75ohm USE.
THE SCALE MAY BE CALIBRATED USING THE RELATIONSHIP:

$$\text{POWER(W)} = \frac{(\text{METER READING}(\mu\text{A}))^2}{10} \quad \text{FOR THE 1W RANGE.}$$

$$\text{OR POWER(W)} = (\text{METER READING}(\mu\text{A}))^2 \quad \text{FOR THE 10W RANGE.}$$

i.e. A READING OF 60uA ON 1W RANGE IS EQUIVALENT TO A POWER OF $\frac{60^2}{10}$ W i.e. 3600 i.e. 360mw

COMPONENT DETAILS; THE DIODE SHOULD BE A HIGH SPEED GERMANIUM POINT CONTACT DIODE—GOLD BONDED TYPE (COMPUTER BOARD TYPE) THESE ARE IDEAL.....

THE METER WAS A DICE SWITCH MRA -65u 100uA MOVEMENT BUT ANY 100uA METER WOULD BE SUITABLE.....

GRANT WILKES VK5ZCA

VIDEO RECORDING

To solve the octave problem we translate the frequency to be recorded to a higher frequency band, an example of what this means is as follows. Suppose we have a video signal 0-4Mhz we want to record as you seen earlier the direct recording method is not really practical so we amplitude modulate a 10Mhz carrier, the result will be a signal of 6 to 14 Mhz, IE lower sideband from 10 down to 6Mhz and upper sideband from 10 to 14 Mhz. Such a signal only occupies less than two Octaves.

This method involves having to replay even higher frequencies than those encountered with an unmodulated video signal but the head to tape speed can now be made high enough to make this now possible.

I used amplitude modulation in the example but in fact frequency modulation is used.

The reason that fm is used rather than am is that due to the high speeds of the heads perfect contact with the tape is not possible in the helical recording system and as you know if the head contact varies, you will have amplitude variations in the output from the heads and this is not very easy to remove from the recorded signal.....

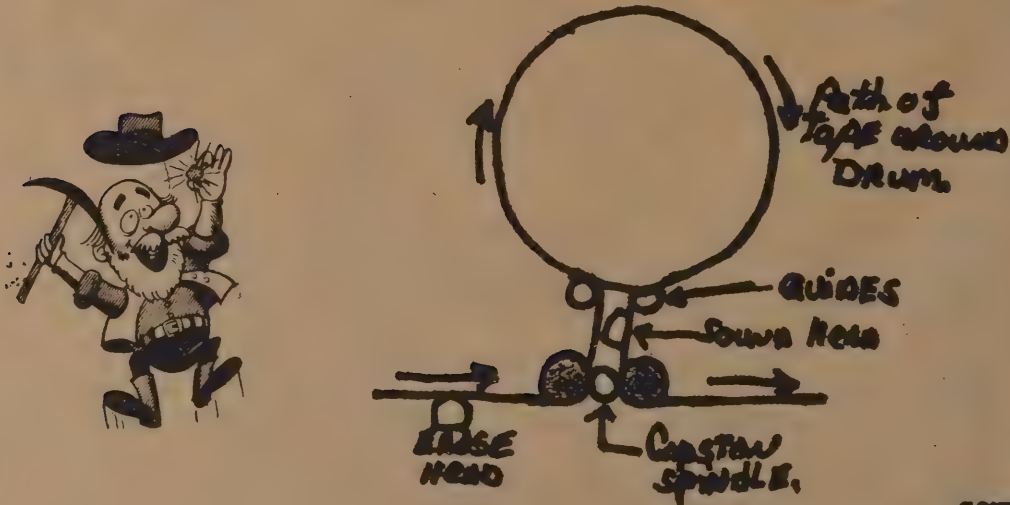
Where as with fm any amplitude variations can be eliminated with limiters. More on that later.

HELICAL SCAN.

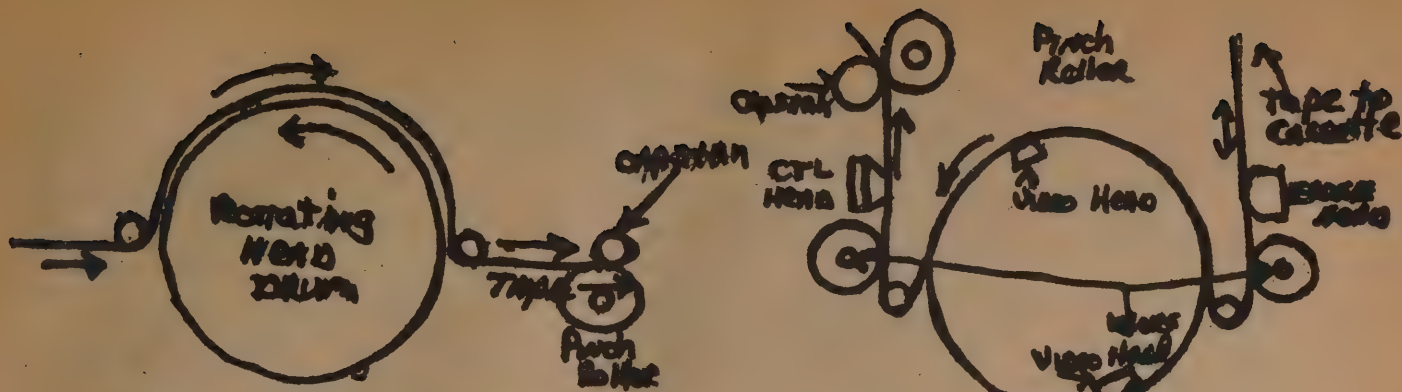
As with audio recording there are the usual reels of tape and a capstan to pull the tape past the heads, but that is where the similarity ends, instead of fixed heads this is replaced by a head drum assembly in which a set of heads rotate at a high speed, usually in the order of 1500RPM.

There are several arrangements that are used today to wrap the tape around the heads, below are shown some of the most common ways used today.....

THE OMEGA WRAP FORMAT.



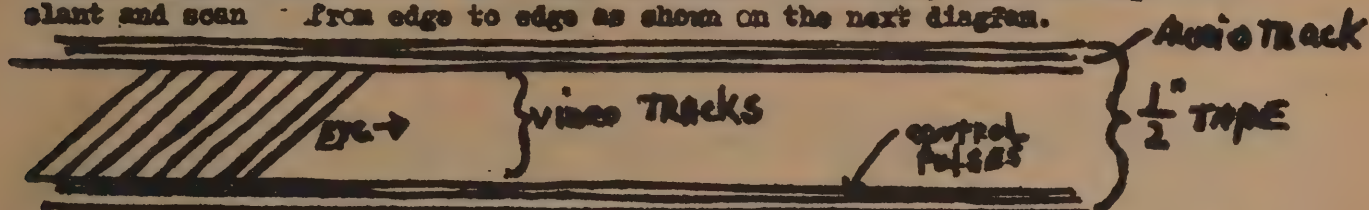
CONT.



**TWO HEAD OMEGA WRAP
USED IN J STANDARD RECORDERS. ETC.**

**"M" FORMAT...
USED IN THE VHS SYSTEM.
CASSETTE.....**

In the omega wrap system the tape is wrapped around the head drum assembly, this is usually a fixed top and bottom drum with a rotating disc at the centre. the tape is fed to the drum assembly on a slight tilt or the drum assembly is tilted slightly, this is so that when the heads rotate they scan the tape on a slant and scan from edge to edge as shown on the next diagram.

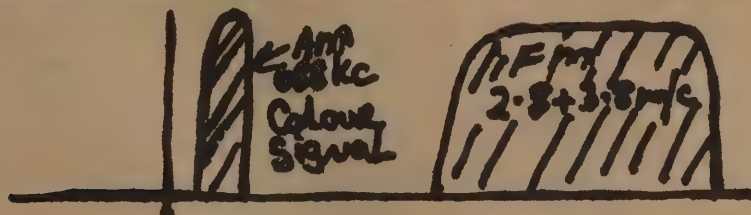


On the in side of the tape feed that is where the erase head is positioned, and on the out side of the drum is the capstan and ctl head (control head). There are too numerous types of head drum and feed systems to explain in this article as most of the systems do the same job except their methods are different. Also the tracks are laid down differently and some use the audio tracks on the top and some on the bottom, some have two sound tracks, some have one. the differences can go on for ever.....

Most of the recorders today employ two video heads and so i will concentrate on this system, The video heads rotate at 250ps and thus each head scans one field and so one complete revolution produces on the tape one complete frame.

On playback these signals are fed to two identical fet amps and then resistively mixed with a pot, this same pot is used as a ballance pot to ballance the output from the heads.

The output produced from this pot contains the FM signal that was originally recorded on the tape plus a AM subcarrier if colour information was also recorded.

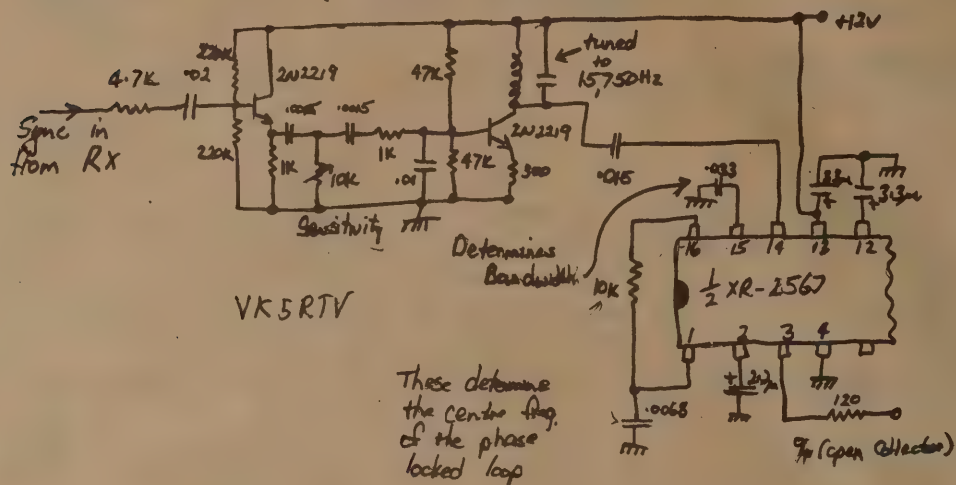
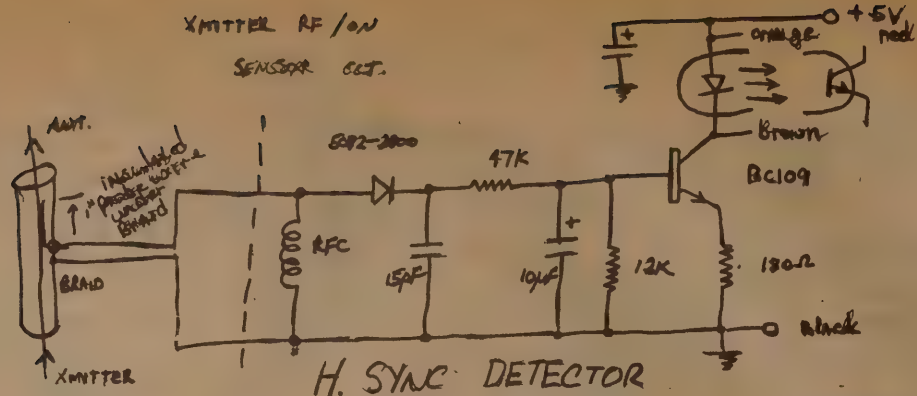


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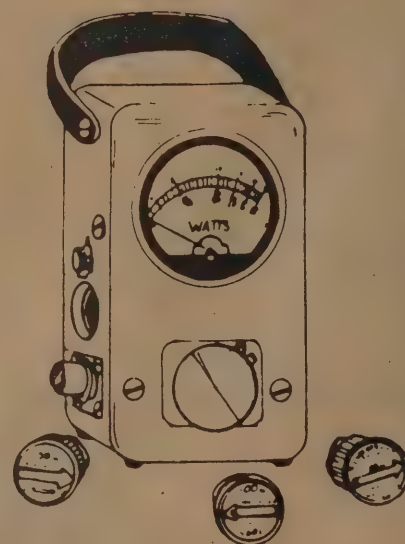
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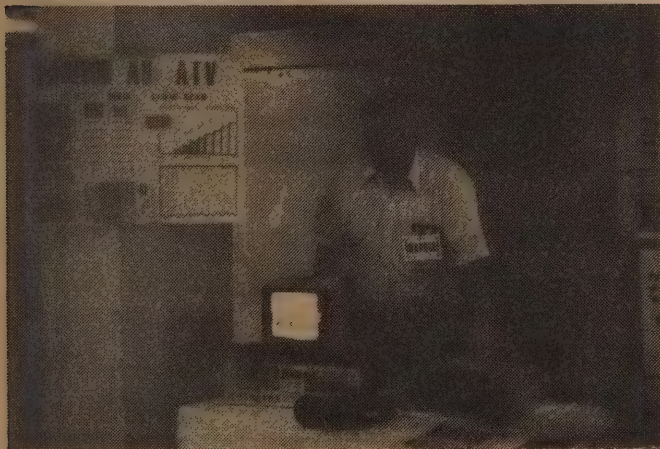
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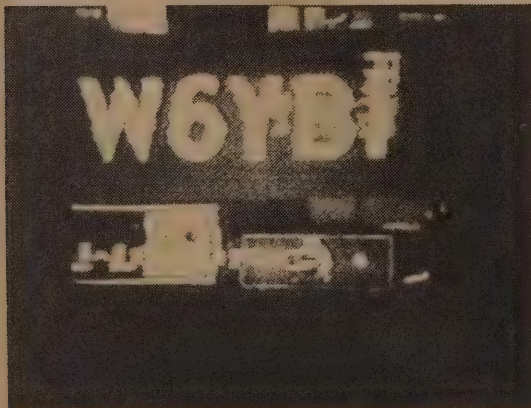
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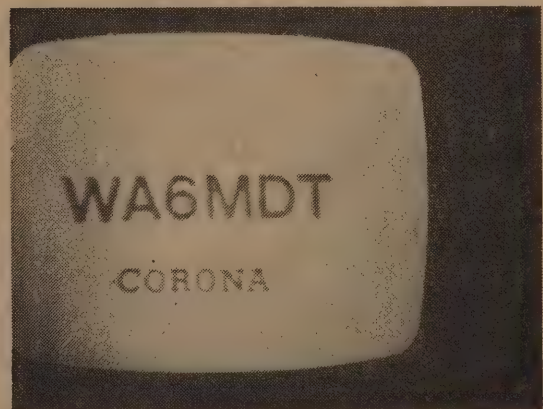
Photo by WB0TSG



Tom's 1265 MHZ ATV Rptr Signal from about 25 miles at my QTH



Via 1265 MHZ — W60RG Rptr 25 miles. W6YBI is about 30-35 miles from Rptr.

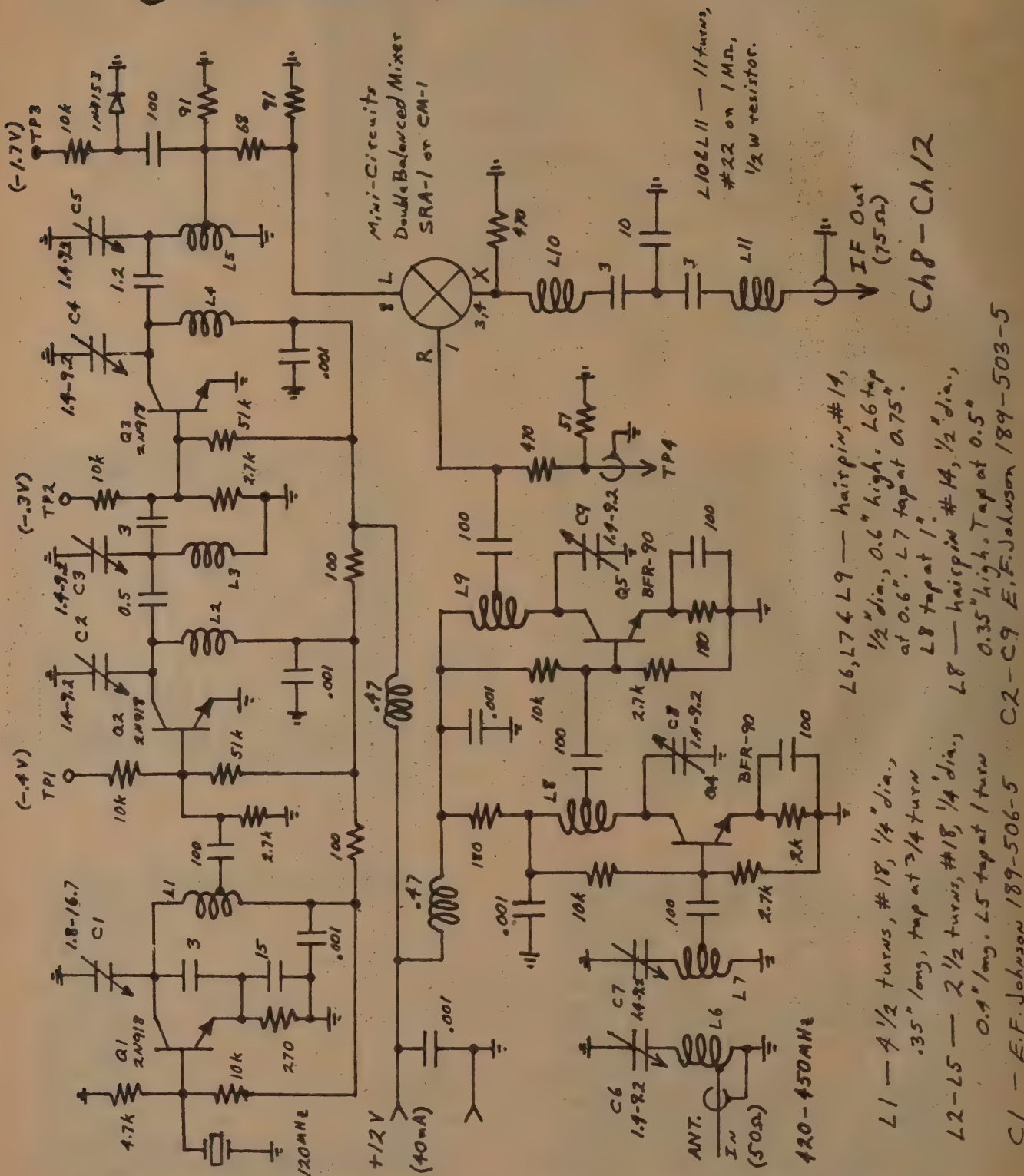


My own signal received at my store, 12 miles from shack at home on 434 MHZ

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AN APPLIANCE OPERATOR'S GUIDE TO /T OPERATION.

By Andrew Emmerson G8PTH

The title of this short article is a bit of a joke because I am a bit of an appliance operator myself. Nonetheless, it is a fact that there are a lot of TV amateurs who are not on the air and are a little hesitant to start building RF equipment even though they are perfectly proficient at video. This is because good constructional practice for UHF is not easily learned from a book and you can easily spend a lot of time and/or money trying to build something which in the end does not even work. (I did). And this is not for the lack of effort or time spent, but purely knowledge which is not easy to acquire for a first timer. Up to now, though, there was no alternative if you wanted to go on the air with ATV, since off-the-shelf equipment just did not exist.

The situation has changed in the last couple of years, however, and a variety of products are now available. You won't find them in every shop of course, but they can be obtained. I must point out immediately that the equipment is not cheap, and you would be worried if it was! It is made commercially by people in order to make a living, so it is obvious you could make the same equipment yourself at lower cost, if you could. But assuming you cannot or you don't have the opportunity and still want to get on the air, what do you need? Well, the diagram shows what by local experience is necessary for the basic ATV station. It is the sort of system we recommend in our Kent group to people starting up, and there is no commercial bias in the choice of equipment. I do not hide the fact that I am a British agent for PC Electronics, but it is good stuff and I have had no complaints from any of my customers. Here then is the key to the diagram.

1. Source of video. Essential. A camera is the most satisfying. Look for ex-surveillance ones, preferably of a well-known make e.g. Pye, Ikegami, so that you can get spares and manuals. Expect to pay £50 to £60 for a good one with lens. You'll save a lot of later heartache if it is switchable internal/external syncs. Also make the Project 100 SFG and pattern generator.

2. Oscilloscope. Essential. Use for monitoring outgoing signals (RF) and fault finding in general. Monitoring your own signal on a TV receiver or by watching the power meter is a waste of time. Adjusting video gain and sync level on a light with another station watching is OK, but you really do need a good scope. Try and get a good one, preferably from someone you know and trust. Price £20 to £100.

3. Good 70 cms. aerial, mounted as high as possible. Essential. This means a J-beam 8 over 8 or a MBM48/70. Both of these have the bandwidth necessary for TV which a Parabeam does not. Secondhand (look in Rad Com) is OK if you clean the elements with wire wool and varnish the assembly really well.

4. Good preamp. Advisable. Masthead mounting is best but this brings in complications with remote controlled relays. If the coax feedline is fairly short and of good quality you can get away with fitting it in the shack. Practical tests show (a) Modular Electronics to be better than SEM, and (b) if you use a MMC 435/51 converter a preamp will not improve reception noticeably.

5A. 70 cms. Converter. Optional. If you have a 625 line TV which has a VHF tuner (old dual standard or modern Continental) one of these is an attractive proposition. If you are pumping ATV down long lengths of coax it makes sense to do it at VHF rather than UHF. You can even use a cast-out upverter to get it back to UHF to watch it on a normal UHF set. Price in the £25 region.

5B. TV set which tunes 70 cms. Optional. As we have said before a lot of modern TVs tune 70 cms. anyway. Otherwise an old banger with the tuner changed for a 1043 varicap will do fine.

6. Good coaxial feedline. Essential. UR67, not UR43 or 70. Ask around, you might get it secondhand from someone in the Club, otherwise Westlake is recommended for low prices.

7. Transmitter. Essential. PC TX-A5 and PA5 combination is practical and effective. Bias and Gain presets should be removed and replaced by rotary pots on the front of the cabinet you install the modules in. Next to the pots you can also put a PTT (push to transmit) switch and a big red 12V 'on air' 1 amp. Price about £75 plus duty.

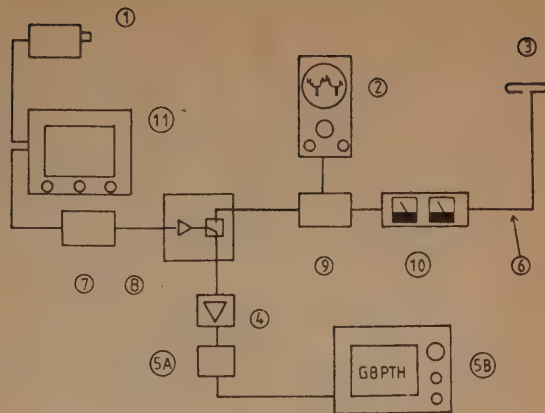
8. High power linear. Nice but not essential. The EDL432P by SOTA will give you as near the legal maximum of power as makes no difference. Those solid state megawatts from Liverpool are rumoured not to be very successful in TV use (prove me wrong!) and require big, expensive power supplies. The EDL on the other hand is compact, remarkably linear and self-contained. Despite denials from the manufacturer its longterm availability may be in doubt (they don't advertise it any more) but it is good (not perfect) and I'd advise you to get it sooner rather than later if you intend to. Price £135. Incidentally, don't run 10W into it. Five is closer to the mark and you can adjust the bias and gain pots on your TX-A5 to get the best-looking output waveform. For this you will also need:-

9. Inline Video Detector. Essential. You cannot send a good TV signal if you cannot see what it looks like. PC Electronics do an assembled PCB module but homebrew is cheaper and simple. See page 10.42 of the RSGB VHF/UHF Manual.

10. Power and SWR Meter. Useful luxury. Good ones were very expensive until recently but you can now get an accurate, premium quality one for around £30 from Lee Electronics. It is called the Toyo 435N and has N type connectors, so it must be good!

11. Monitor (s). One is essential, two are nice, more than two is very nice. Obviously you need to see what you are putting out, and once you have more than one source of video, it is useful to have a switchable preview monitor. Compact transistor monitors are pricey (£45 upwards). old valve ones hot and bulky but fairly cheap, say £10 to £25. Take your pick!

12. Connectors. For RF use BNC or N according to the size of the cable (slight oversimplification) and for video use UHF (PL259) simply because nearly all professional equipment does or used to. Rally prices seem to even out at 40p to 50p for BNC and UHF, 60p for N type. When buying BNC and N type connectors check the markings to ensure that they are 50 ohm, not 75 ohm.



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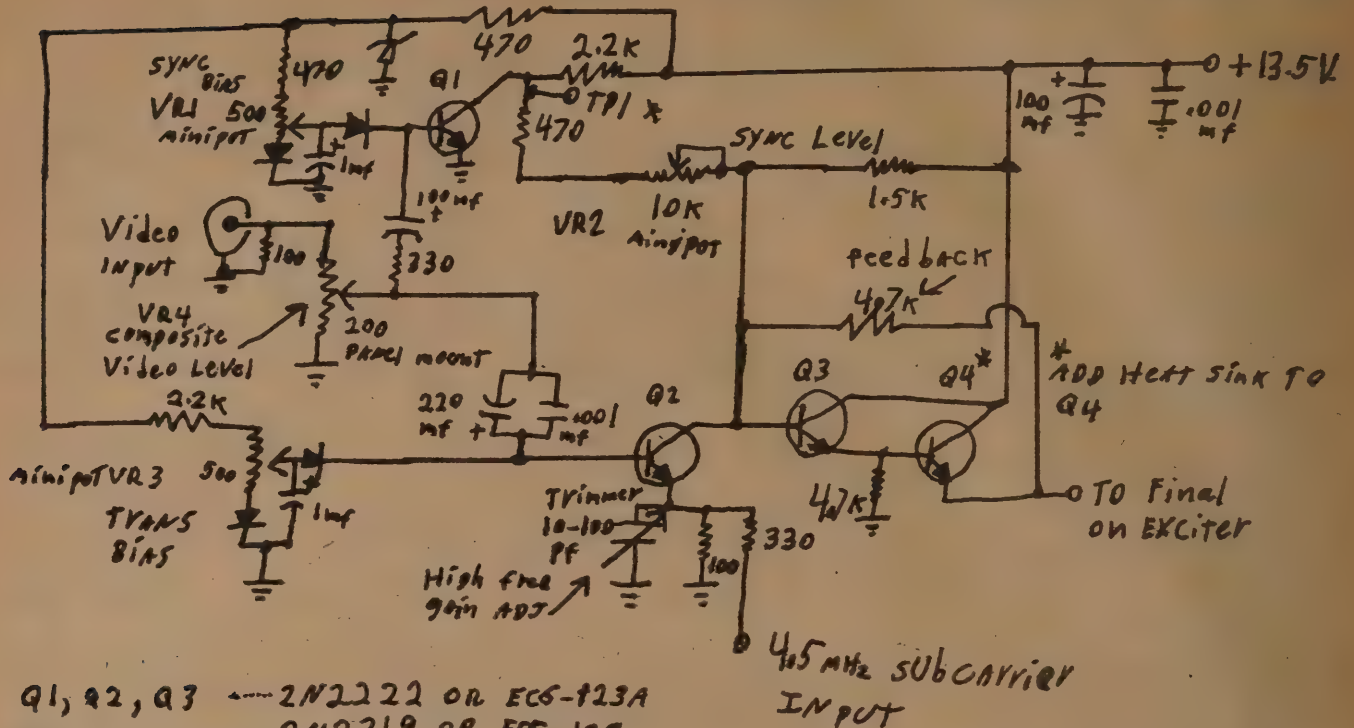
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6VOLT 1WATT "WA6SVT" VIDEO MODULATOR



Most Atv transmitters have sync compression and high frequency rolloff. This Modulator will make up for this problem. CIRCUIT DISCRIPTION Q1 operates as sync separator near the saterated end of the curve. VR-1 is set so the amp, is saterated until the negative going sync pulse unsaterates Q1 and a high going pulse is generated at the collector of Q1. VR-2 sets the sync level. Q2 inverts the video and provides the gain in the system. The high frequency Adjust will boost the gain as frequency is raised. Q3 is a Emitter follower type buffer. Q4 is the output stage with the feedback resistor 4.7K used to give a positive feedback to give a linear waveform. The value of the resistor can be changed to suit the paticular application. The sync is inserted at the base of Q2 to provide the extra sync level needed for the 40 units sync to 100 units video.

ADJUSTMENT Set VR-2 to its open position. Apply a video signal with VR-4 to its 3/4 full position and adjust VR-1 for a waveform on the diagram, set the scope at 10 us. Adjust the transmitter bias, video gain, and RF. adjustments for best picture. Now advance VR-2 for desired sync level. Adjust the high frequency adjust for a flat frequency responce. The use of a demodulator and scope will be vary helpfull, but it can be performed other ways.

Good Luck Mike Collis WA6SVT.
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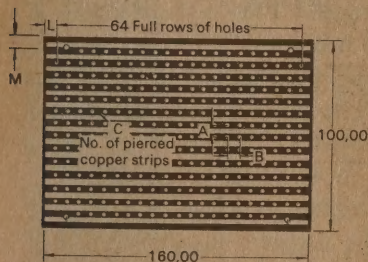
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0.1" X 0.1" hole spacing

Quan.	Size
1	3 3/4" X 5"
2	3 3/4" X 3 3/4"
5	1 1/8" X 2 1/2"

3/16" X 3/16" hole spacing

Quan.	Size
2	2 1/2" X 5"
5	1 1/8" X 2 1/2"



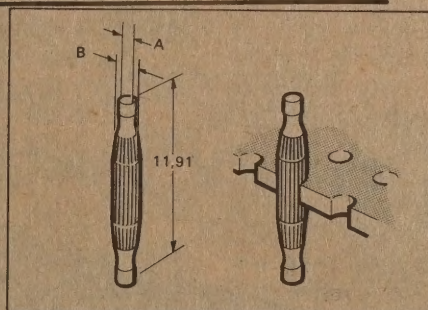
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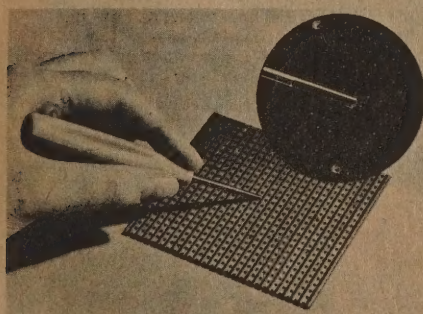
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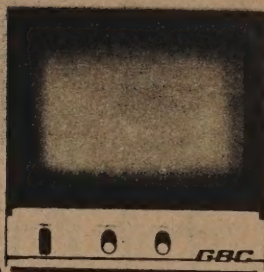
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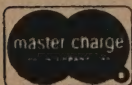
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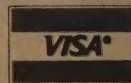
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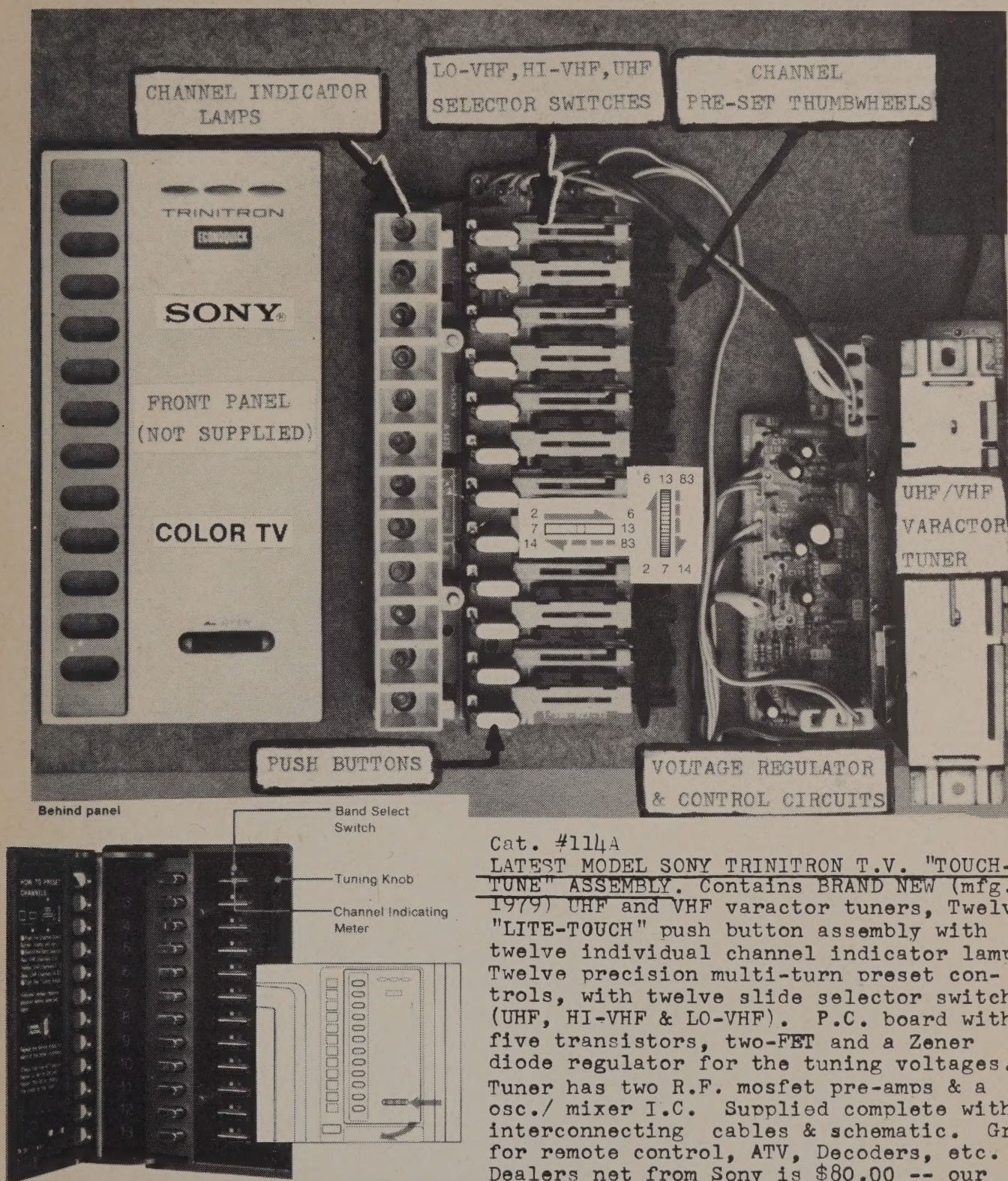
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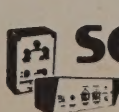
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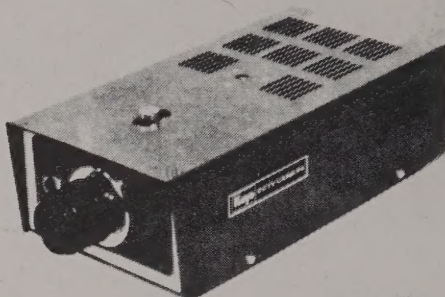
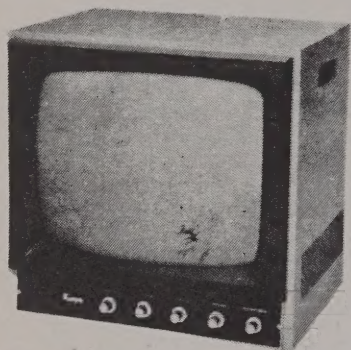
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